

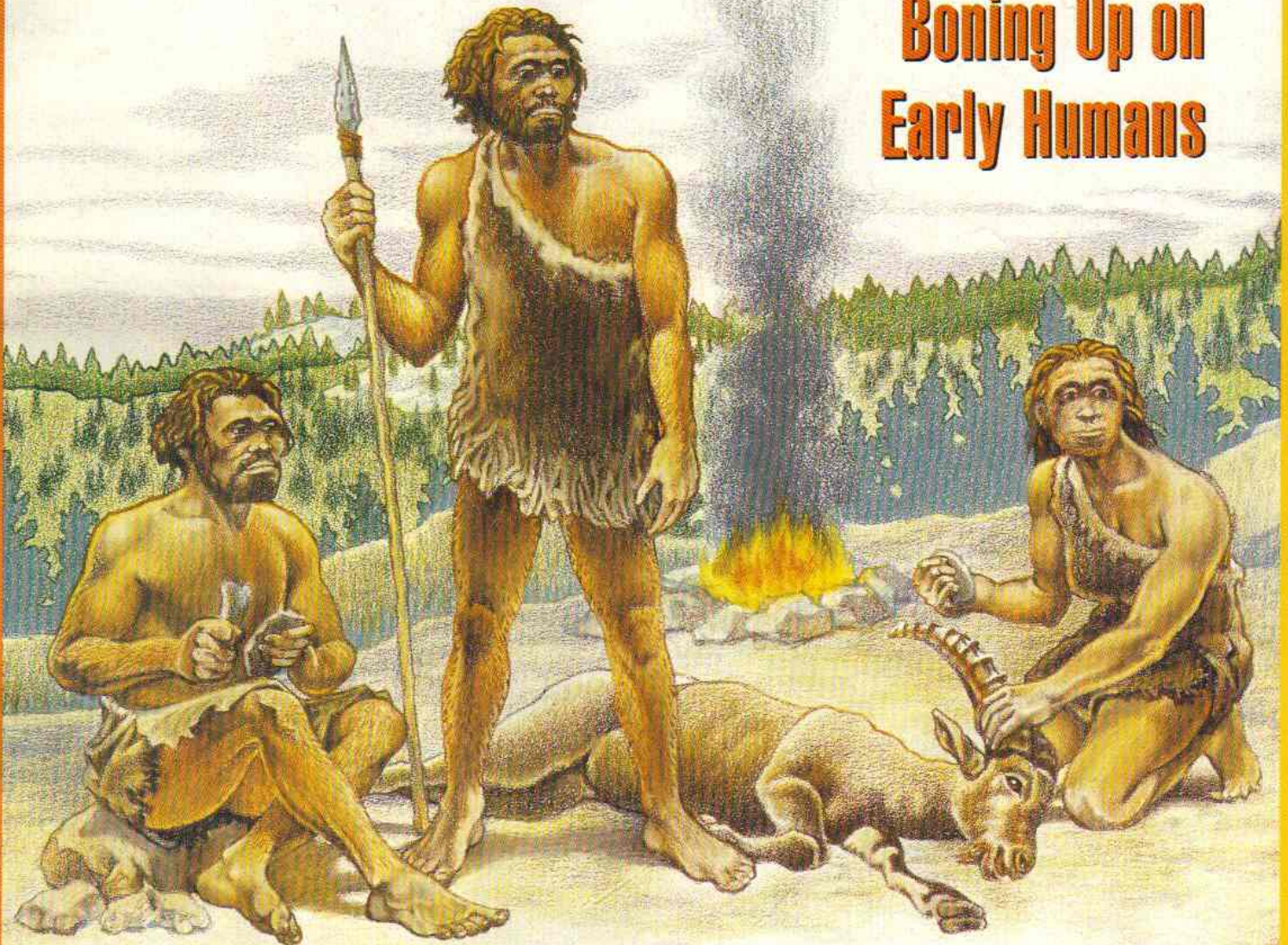
3.2.1

CHILDREN'S TELEVISION WORKSHOP EXPLORES THE WORLD

# CONTACT®

MAY 1991

## Boning Up on Early Humans



**Plus:**

**Predicting the Future**  
**High-Tech Animal Medicine**  
**Circles Baffle Scientists**  
**Square One Puzzles**

#495B\*\*\*\*\*#5-DIGIT 82514  
#SIRB0104M91 5# (C01)  
760416 SIR B0104M91 0448  
J/A 91  
MURIEL A SHIRHAN CJUS  
BOX 104 ETHETE RT #LG  
FT WASHAKIE WY 82514-0104



**NOW**  
ON  
**TANG**  
BRAND  
JUICE BEVERAGE  
**FRUIT BOX**



**TANG**  
BRAND

**FRUIT BOX**

**SPORTS  
BREAK**

What's  
wrong with  
this scene?



### TRIVIA

How high is a  
regulation  
professional  
basketball hoop?

- A) 9 feet,  
9 inches
- B) 10 feet,  
6 inches
- C) 10 feet
- D) 11 feet

ANSWER: C

TEST YOUR FAST BREAK,  
AGILITY AND LEG

Side line: Jump from side  
with feet together. Don't  
touch line. Repeat for  
35 seconds. Add 5  
seconds per week  
up to 60 seconds.



PRESIDENT'S COUNCIL ON PHYSICAL FITNESS & SPORTS

**NEW**  
DIFFERENT  
SPORTS  
GAMES  
ON  
EVERY BOX



**TANG**  
JUICE BEVERAGE

**Orange**  
FLAVOR WITH OTHER  
NATURAL FLAVORS

**100%**  
VITAMIN C



8.45 FL. OZ. (250 ml.)



Publisher  
**Nina B. Link**  
.....  
Editor-in-Chief  
**Jonathan Rosenbloom**  
Art Director  
**Al Nagy**  
Senior Editor  
**Curtis Slepian**  
Associate Editors  
**Russell Ginns**  
**Elizabeth Vitton**  
Assistant Art Director  
**Nadina S. Simon**  
Assistant Editor  
**Rhett Aleong**  
.....

Director of Research/Magazine  
Group  
**Dr. Renée Cherow-O'Leary**  
Magazine Research Manager  
**Donna Sabino**  
Research Assistant  
**Julie Seyfert**  
.....

Director/Creative Services  
**Aura Marrero**  
.....

Group Vice President/  
General Manager  
**Bill Hitzig**

Vice President/Finance  
**Julie K. Andersen**  
Vice President/Circulation  
**Kathleen O'Shaughnessy**  
Subscription Manager  
**June Wick**

Circulation Marketing Manager  
**Jane Cazzorla**  
Production Director  
**Carlos N. Crosbie**  
Senior Production Manager  
**Sharon Djaha**  
Production Manager  
**Carolyn Ahrens**  
.....

Vice President/Advertising  
**Linda Vaughan**

Advertising Director  
**Gail Delott**  
Senior Marketing Manager  
**Karen Siegel Gruenberg**  
Senior Sales Representative  
**Denise D'Amour**  
**Therese Innis**

Sales Representative  
**Laura Billings**  
Advertising Research Coordinator  
**Alecia Lane-O'Neill**  
.....

#### ADVISORS

**Dr. Gerald S. Lesser**  
Professor, Harvard Graduate  
School of Education

**Dr. Charles Walcott**  
Director, Lab. of Ornithology,  
Cornell University

**Dr. Jeann Walker**  
Professor of Physics,  
Cleveland State University

**Dr. Charles A. Whitney**  
Professor of Astronomy,  
Harvard University



Winner: National Magazine Award  
General Excellence



Award Winner Feature Category

3-2-1 Contact (ISSN 0195-4105) is a publication of the Children's Television Workshop, published ten times during the year, monthly except for February and August. © 1991 Children's Television Workshop. All rights reserved. All contents owned by the Children's Television Workshop and may not be reprinted without permission. 3-2-1 Contact is a trademark and a service mark of the Children's Television Workshop. Printed in the U.S.A. Number 116, May 1991. Editorial offices: One Lincoln Plaza, New York, N.Y. 10023. Send subscription orders to 3-2-1 Contact, P.O. Box 53051, Boulder, CO 80322-3051. POSTMASTER: Send address changes to 3-2-1 Contact, P.O. Box 53051, Boulder, CO 80322-3051 (including label from cover of magazine). Subscriptions: 1 year U.S.A. \$15.97; Canada and other countries add \$6. GST Registration number: 124768888. Second-class postage paid at New York, NY and additional mailing offices. Bulk copy rates to schools and other institutions available on request.



# C O N T E N T S

## FEATURES

- 6** Stones and Bones:  
A New Look at  
Early Humans

- 11** Things to Come:  
Experts Gaze  
into the Future

- 16** CAT Scans:  
High-Tech Medicine Can  
Save Animals, Too

- 22** Rings of Confusion:  
England's Mysterious Circles  
Have Scientists Baffled

- 25** More Mysterious Circles:  
A CONTACT Puzzle



**11**



**16**



**28**

## SQUARE ONE TV

- 32** Crafty Candy Puzzles

- 34** Gnome Alone:  
A Square One Comic

## DEPARTMENTS

- TNT: Newsblasts **2**

- Any Questions? **4**

- Factoids **26**

- The Time Team **28**

- Basic Training **36**

- The Slipped Disk  
Show **37**

- Extra! **38**

- Did It **40**

### ON OUR COVER

An artist's interpretation of a  
Neanderthal family group.  
Illustration by Alisa Klayman.





## Stormy Weather

You don't need a weather report to know which way the wind blows. For centuries, people have been using old rhymes to help them predict the weather. And some of those old "forecasts" aren't so unscientific.

Take the old saying, "Red sky at morning, sailors take warning. Red sky at night, sailors' delight." Even though people might not have known what caused the weather, they did know a red sky just before sunrise meant a storm was coming. And a red sky at sunset usually meant good weather the next day.

"The trick is to look at the

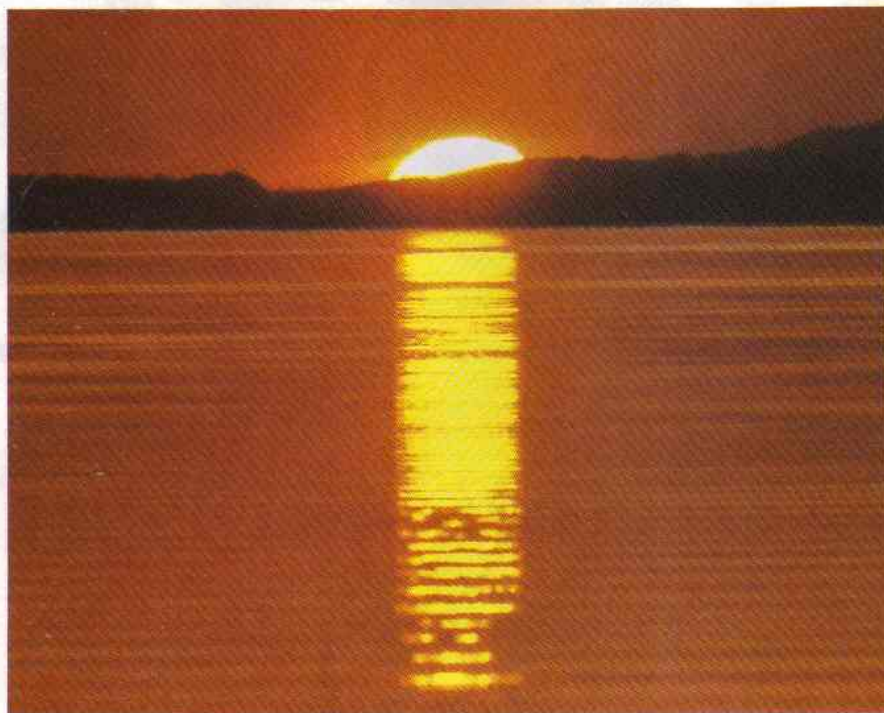


PHOTO © JUAN PABLO LIRA

part of the sky where the sun *isn't*," says Fred Gadowski, a meteorologist. "If the sky is red, some rough forecasts can be made."

The red sky rule works for weather patterns that move from west to east. A red morn-

ing sky in the west means a storm system is moving your way. If it is red at night when you look to the east (and not in the sunset), the storm system is moving away from you.

*Story suggested by Life Blumberg, Olive Hill, TN.*



## NEWS BLASTS



## NASA Gets A Head

When the space shuttle *Discovery* blasted off last spring, it carried lots of interesting cargo into orbit—including a human skull!

The skull, which came from a body given to science, has been aboard three shuttle flights. NASA scientists are using it to study the effects of radiation on astronauts in space.

Scientists sliced the skull to make room for special detectors. (The detectors measure the amount of harmful rays that penetrate the skull.) The skull was then put back together and placed in a plastic head.

On each flight, the head was placed in a locker in the shuttle. Once in orbit, the head was attached to a wall with Velcro. At the end of each mission, it was sent to the Johnson Space Center in Texas to face many tests.

The test results are helping NASA design better radiation protection for astronauts in space. You might say the skull helps them plan...um...ahead!



PHOTO COURTESY NASA



## Lost and Found

A rare type of butterfly that dates back to the Ice Age has been living on the edge—of survival, that is. For more than 50 years, scientists thought Fender's blue butterfly was extinct.

But what once was lost has now been found. A colony of the rare butterflies has recently been rediscovered in Oregon's Willamette Valley.

Dr. Paul Hammond, the scientist who found the colony, says the butterflies have had a tough time surviving.

That's because the only food they will eat, a blue wildflower, is also getting harder to find.

The number of wildflowers is shrinking because large areas of Oregon's prairies have been turned into farmland. Less than one percent of the butterfly's native prairie there remains.

And if more flowers disappear, Fender's blue butterfly could also be lost—for good.



PHOTO COURTESY OREGON STATE UNIV.

## Life or Breath?

An apple a day may keep the doctor away. But it now seems that a clove of garlic may do the same trick. (And the reason it works has nothing to do with garlic breath!)

Garlic has been used to ward off diseases for nearly 4,000 years. But only recently have medical scientists been studying its health benefits.

Now research findings show that garlic may help prevent many illnesses, including heart disease and some cancers.

Don't hold your breath, though. Scientists say it will be a long time before garlic can safely be used as medicine. Some forms of garlic may actually *cause* problems, like allergic reactions.

But as long as you're not trying to treat a disease, says one researcher, "a few cloves of cooked garlic a day can't hurt. It may even help."



PHOTO © FRANCISCO ONTANON/IMAGE BANK

## Watch Out!

You can run, kids, but you can't hide—especially now that wristwatch-telephone pagers are out there.

Instead of yelling out the door, your parents can signal you electronically to come home for dinner. All they have to do is reach out and touch some buttons on a touchtone phone. The message "Come Home" will flash across your battery-run wristwatch.

How do your parents know you got the message? The pager lets you signal back loud and clear.

Story suggested by Lea Stenson, Rockford, MI.



ILLUSTRATION BY CAMERON EAGLE



## So What's New?

You tell us and you'll get a nifty CONTACT T-shirt—if we print your story. Send us any science story from the news that you think our readers would like to know about. (Be sure to tell us your T-shirt size and where you heard the story.)

Send to:

**TNT**  
**3-2-1 CONTACT**  
**Magazine**  
**1 Lincoln Plaza**  
**New York, NY 10023**



# ANY QUESTIONS?

By Wendy Williams

WHAT

## ARE THE SEVEN MODERN WONDERS OF THE WORLD, AND WHY ARE THEY CALLED THAT?

It all started back in the year 150 B.C. That's when a famous mathematician named Philon made up a list of the seven most spectacular human-made sights in the world. He called them the Seven Wonders of the World. Philon's top seven included super structures like the Great Pyramids in Egypt.

But, hey! We've come a long way since the days of building pyramids. So we now have a new list — and a new name. It's called the Seven Wonders of the Modern World. What makes the list? The Empire State Building, the Jorell Bank Telescope, the Golden Gate Bridge, the Panama Canal, *Sputnik I* (the first satellite ever launched in space), the Hoover Dam and *Nautilus* (the first atomic-powered submarine).

But it's been more than 25 years since that list was made. And with so many new wonders, we can only wonder what the next Seven Wonders of the World will be!

*Question sent in by Leann Beck, Spirit Lake, IA*

WHY

## DO YOU GET BUTTERFLIES IN YOUR STOMACH?

You know the feeling. In a few minutes, you have to give a report in front of the whole class. Your hands are shaking. Your mouth is dry. And you've got butterflies in your stomach!

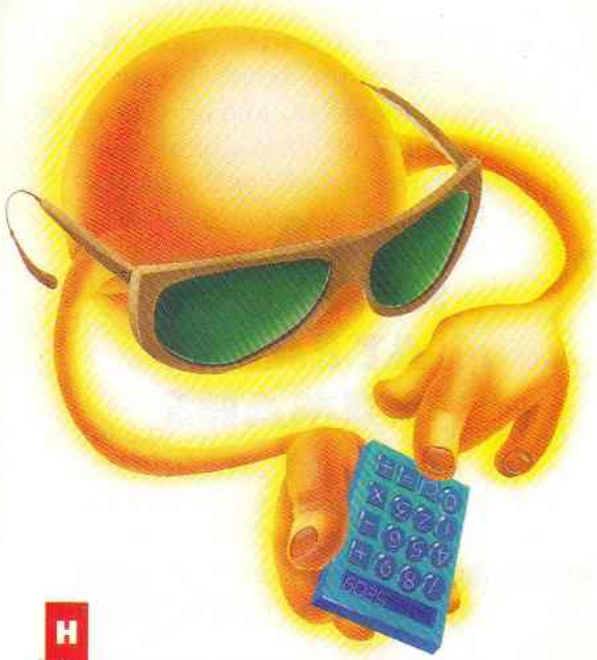
What causes your body to react this way? Fear! When you're frightened, your adrenal glands (located above your kidneys) get to work. They release a strong hormone called "adrenalin" into your bloodstream. The adrenalin makes your muscles tense up — even shake, which is why some nervous people are said to "quiver with fear." It might also feel like your throat is closing up and you can't breathe.

All of this fear or nervousness causes an increased motion in your stomach's muscles. As a result, your stomach makes more acid than it needs for normal digestion. And the acid feels like "butterflies" in your stomach.

*Question sent in by Megan Walsh, Addison, NY*







## HOW

### DOES A SOLAR CALCULATOR WORK?

In 1954, three Bell Telephone scientists got the bright idea to make solar cells that could turn sunlight directly into electricity. These cells produce electricity as long as they are exposed to sunlight.

Everybody was excited by this discovery because solar cells don't have parts that wear down or break after long periods of use.

The solar cell that is used today is made of silicon. Silicon is carefully refined sand. The silicon used for solar cells has two thin layers that are electrically charged.

Metal electrodes are attached to the layers. (An electrode drives an electric current into or out of a battery.) Then, panels made up of thousands of solar cells are linked together. These panels form solar batteries.

When these solar batteries are exposed to sunlight, they start to work. So, you might say solar calculators work sunny side up!

*Question sent in by Corinna Leung, Los Angeles, CA*

## WHY

### ARE TARANTULAS HAIRY?

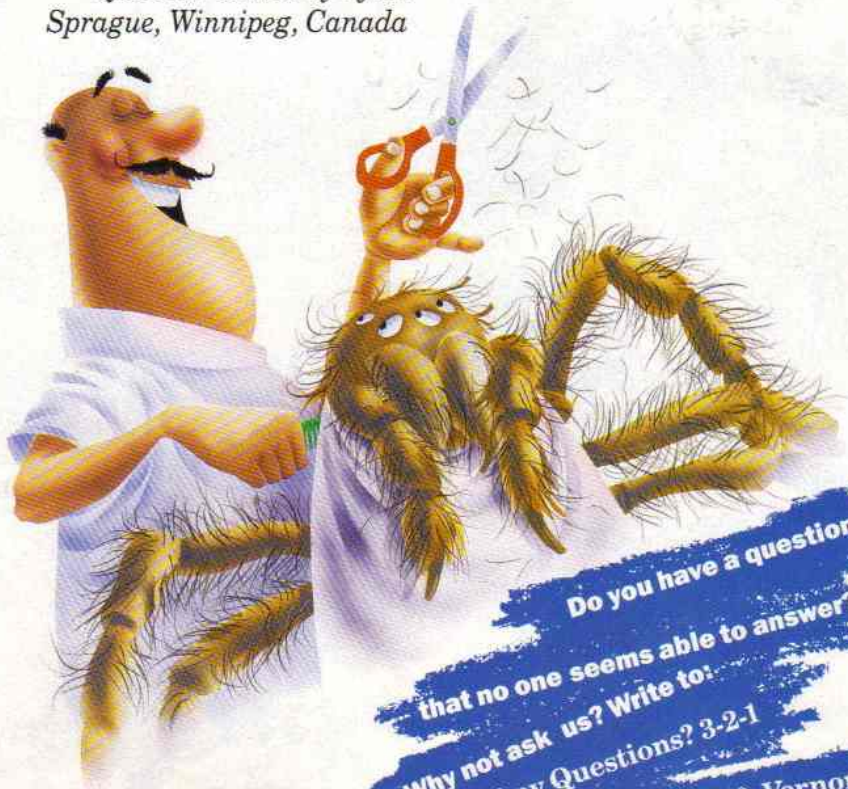
Tarantulas don't have a problem with baldness! They have hair all over their bodies. They even have hair in their mouths!

A mouthful of hair is mainly used for taste. (It's not certain whether a tarantula has good taste, but the mouth hairs help things taste good!) And the hair on a tarantula's legs is used to feel the vibrations of approaching insects.

The most important patch of hair, though, appears on the top of its stomach. When the tarantula senses an attack, it rubs the top of its stomach with its back legs. Then it throws a cloud of irritating hairs at its enemy. These hairs have small hooks, which dig into an insect's skin.

If you're keeping a tarantula as a pet, watch out for these hairy situations! The hairs aren't poisonous, but they can cause sneezing, itching and a painful rash.

*Question sent in by Fjola Sprague, Winnipeg, Canada*



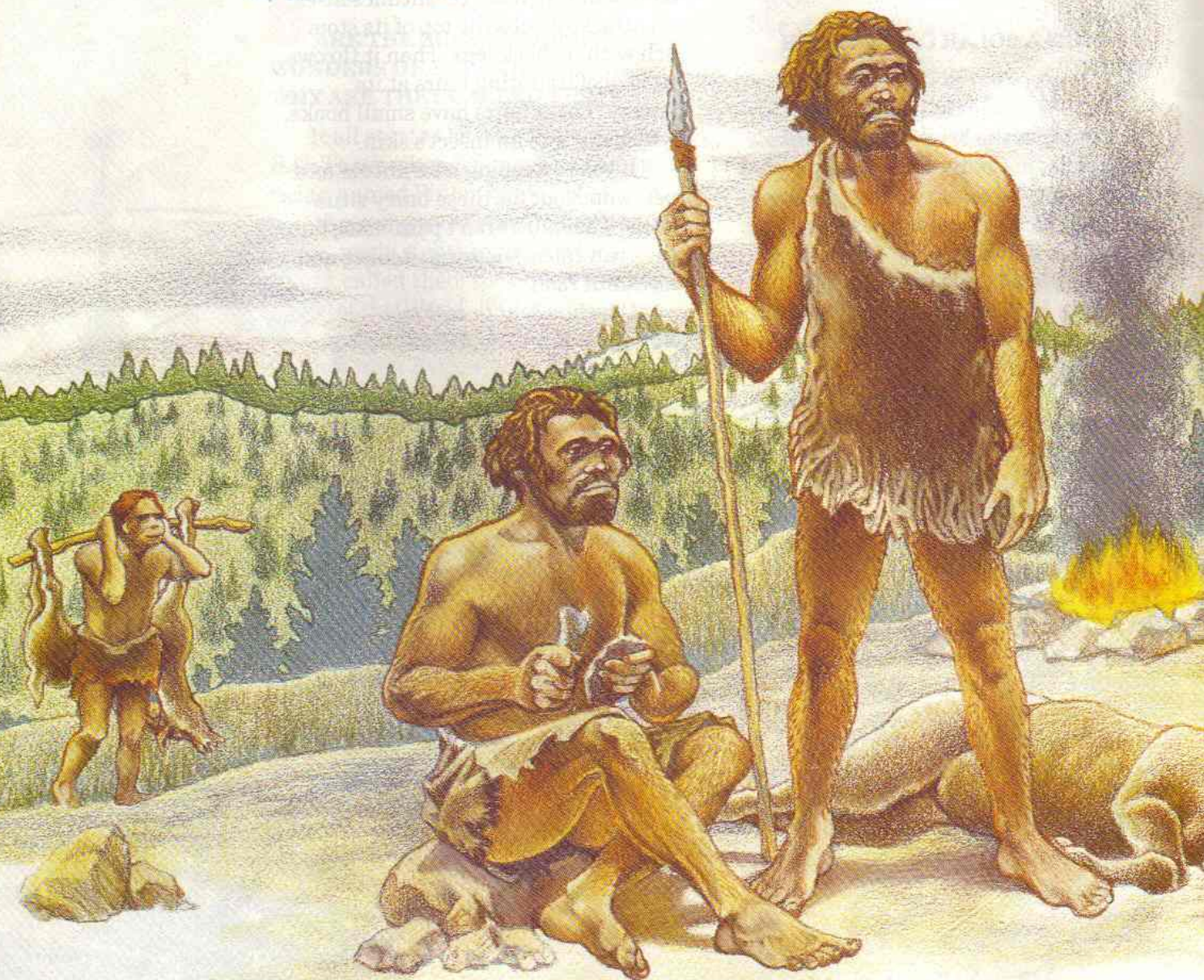
Do you have a question  
that no one seems able to answer?  
Why not ask us? Write to:  
Any Questions? 3-2-1  
Contact, P.O. Box 40, Vernon,  
NJ 07462



# STONES AND BONES

**A  
NEW LOOK  
AT EARLY  
HUMANS**

by Elizabeth Vitton





In 1856, the first piece of the jigsaw puzzle was found. Miners discovered a strange human skeleton in a stone quarry in the Neander Valley of Germany. They dug up an odd skull, a pelvis bone and some thick, slightly curved leg bones. What they didn't know at the time is that they had dug up the first Neanderthal (say: ne-AN-der-tall).

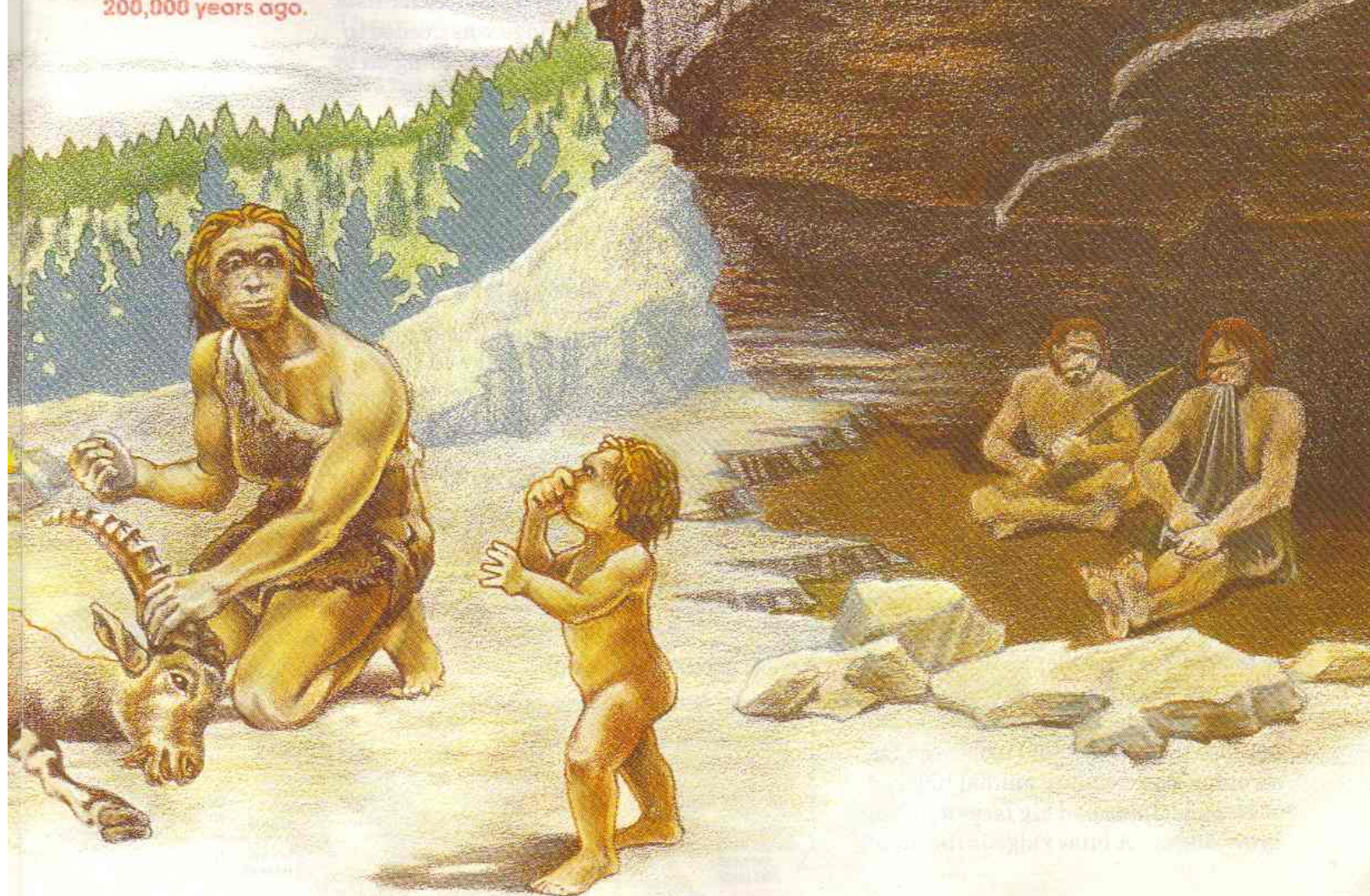
"Neanderthals were the last primitive humans before early modern humans appeared," Erik Trinkaus told CONTACT. He is an anthropologist—a scientist who studies past and present civilizations. "Neanderthals lived in Europe and southwest Asia from 200,000 to about 35,000 years ago."

Until recently, scientists thought Neanderthals were dull, hulking, ape-like creatures. "We now know they *weren't* stupid brutes," says Trinkaus. "They were the first humans to be able to survive in very cold climates—and that takes brains!" (Besides, Neanderthals had to be somewhat brainy to be around for at least 165,000 years.)

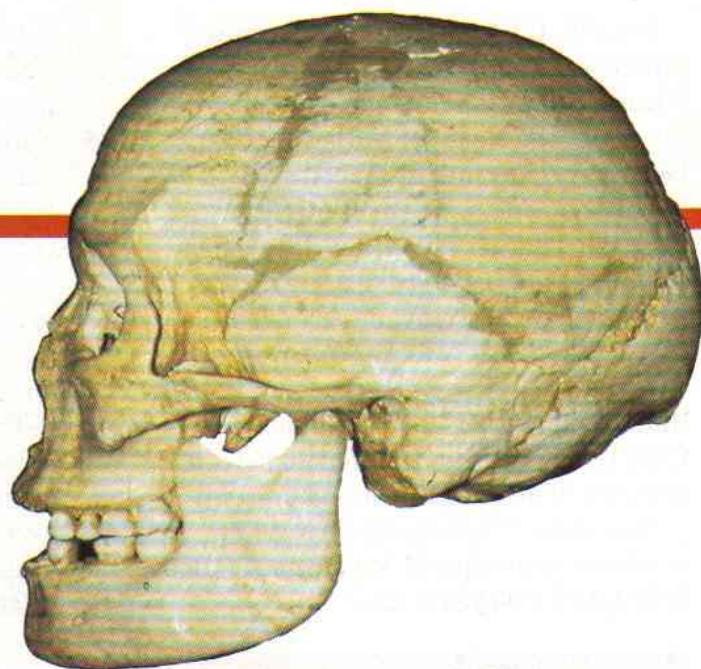
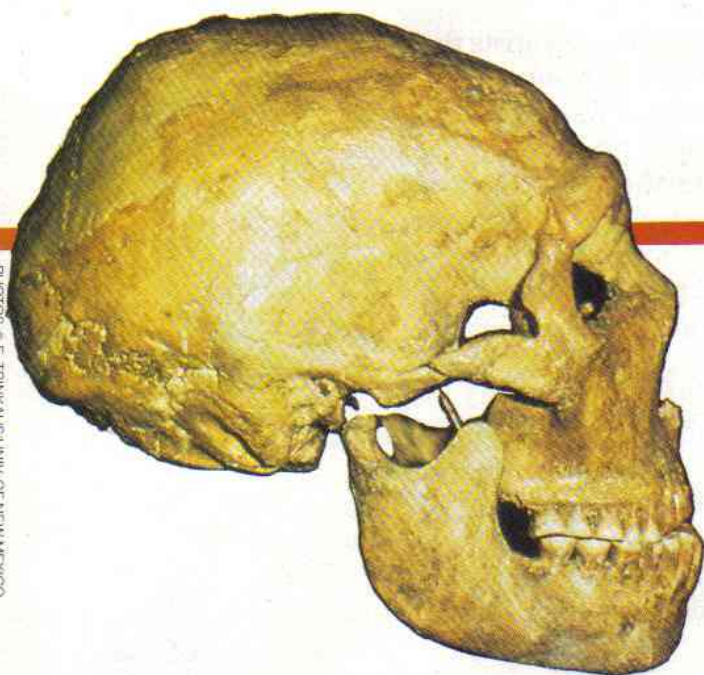
### Tough Guys

Their short, heavily built bodies also helped them stay alive. The average woman stood about five feet tall. The average man was five feet, five inches. "Neanderthals had compact bodies. That helped keep them warm in a

**ALL IN THE FAMILY** This is one artist's idea about what life was like for the Neanderthals as many as 200,000 years ago.







cold environment," anthropologist Fred H. Smith explains. "Eskimos today have a similar build for the same reason."

How do scientists know what the Neanderthals looked like? "You can tell something about the shape of the body by the shape of the bones," Smith told CONTACT. "And muscles leave distinctive markings on bones. The markings show how the muscles were attached to the bone and how they were used."

Neanderthals had to have large, powerful muscles and bones to help them survive. Says Smith, "A powerful body is important in a physically rough environment." Back then, bigger was better. Their chest muscles were more than twice as wide as ours. And their strong jaws held larger front teeth than ours.

"Fossils show that their front teeth were often heavily worn. This means Neanderthals probably used their teeth as a third hand—like Eskimos do today—to hold animal hides as they worked on them," adds Smith. (Scientists believe Neanderthals wore animal skins because they have found tools used for scraping and cleaning animal hides.)

Neanderthals had big faces and heavy brow ridges. (A brow ridge is the area

between your eyes and your forehead.) The teeth were probably used like a vise to hold objects tightly. So some scientists think a strong brow ridge was needed to help relieve the pressure of holding on to an object.

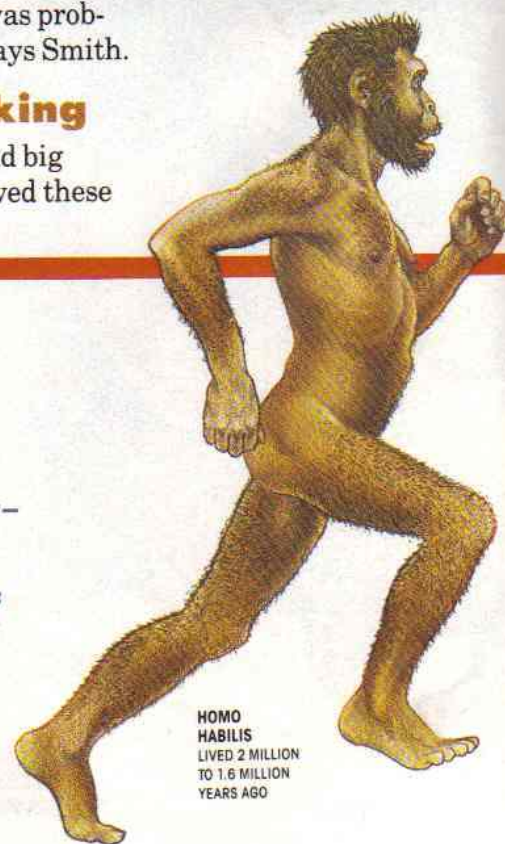
But even if their faces seem a bit primitive, their brains were not. The average Neanderthal brain was even larger than our own. And it was probably just as well developed, says Smith.

### Look Who's Talking

Although Neanderthals had big brains, scientists never believed these

**A STEP IN TIME** *Homo habilis* is our distant, distant ancestor. They were also the first to use stone tools.

*Homo sapiens* began appearing 400,000 years ago—about the time *Homo erectus* disappears.



**HOMO HABILIS**  
LIVED 2 MILLION  
TO 1.6 MILLION  
YEARS AGO



## FACE TO FACE

The Neanderthal skull on the left has a heavier brow ridge than the early modern human skull. The Neanderthal teeth also show more wear. Since the front teeth are worn away, the roots must have been used for chewing and gripping.

primitive humans had anything to say for themselves. Up until now, that is. "They had the ability to speak," says Trinkaus. "They may not have made the same sounds as we do, but they were physically capable of some kind of language." Trinkaus argues that fossil brain casts show that Neanderthals had a well-developed language area.

Scientists also discovered a well-preserved 60,000-year-old Neanderthal skeleton that still had its hyoid bone. (A hyoid is a small bone that's connected to the voice box by small muscles important in speech.) The researchers compared the Neanderthal hyoid with those of 70 modern humans and found few differences. And so, they think Neanderthals were physically able to speak. "Their language was probably simpler than ours, but they were definitely smart enough to put words together," Trinkaus says.

And Neanderthals were intelligent. They made a wide variety of stone tools. The tools found at many Neanderthal sites are finer and more carefully shaped than tools found from an earlier

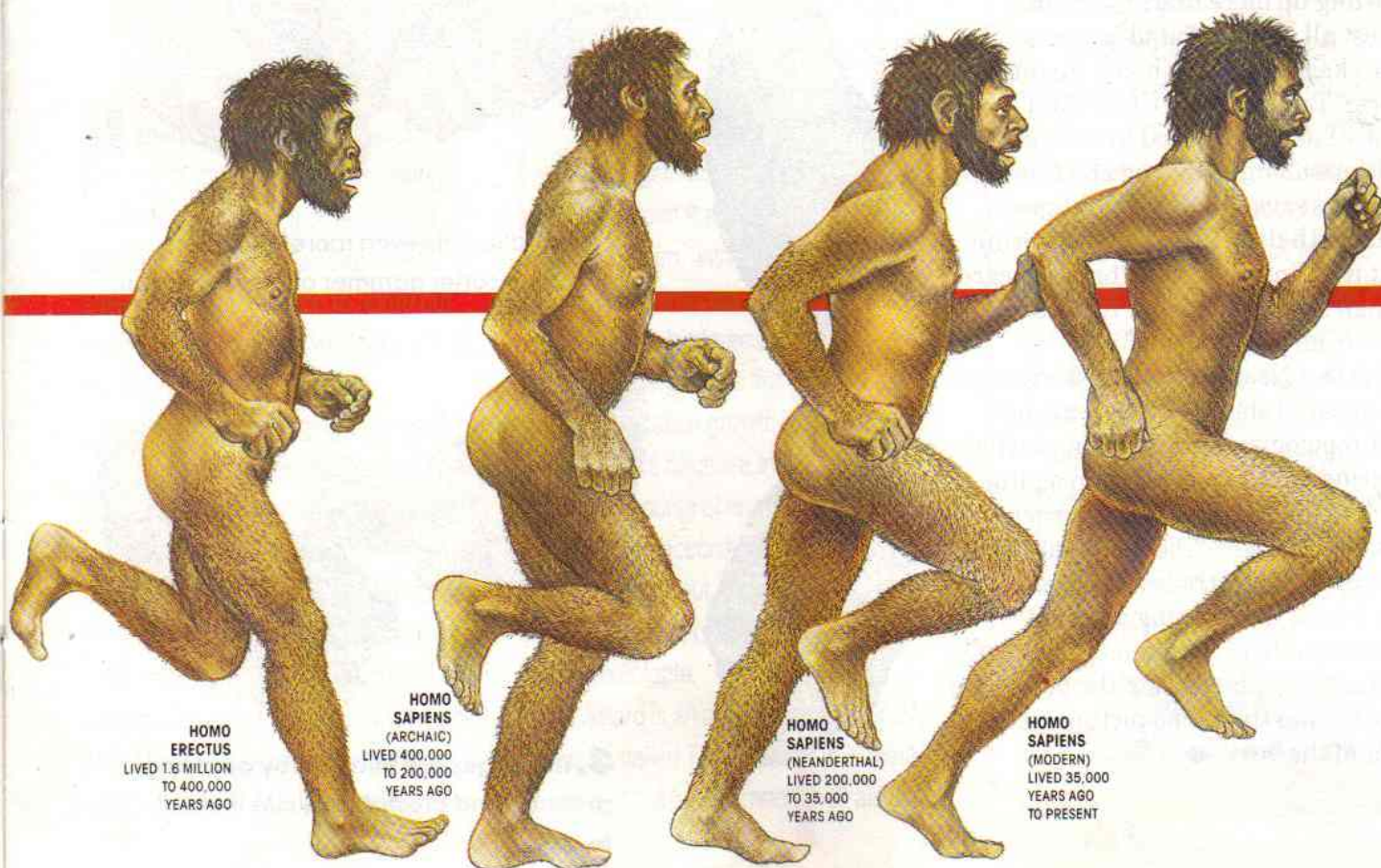
period. "Neanderthals were pretty sophisticated toolmakers. Their toolmaking skills were definitely new and improved!" Smith jokes.

## Staying Alive

Neanderthals also had to be expert hunters to survive the harsh Ice Age climate. In the summer they could live on roots and berries. But in the winter months, the groups had to hunt to find food. "They mostly hunted reindeer, wild cattle, horses and woolly rhinoceroses," says Smith. "We know this because of the animal bones left behind at Neanderthal campsites."

Scientists aren't sure how Neanderthals killed the animals, but they think Neanderthals rolled boulders off cliffs, hurled spears and set traps. (The traps may be similar to those still used by Eskimos.) Hunters probably went after sick, old or young animals.

"Neanderthals would have to have a good understanding of their victims' drinking and eating habits, as well as their movements," Smith told CONTACT. "It would also require



**HOMO  
ERECTUS**  
LIVED 1.6 MILLION  
TO 400,000  
YEARS AGO

**HOMO  
SAPIENS  
(ARCHAIC)**  
LIVED 400,000  
TO 200,000  
YEARS AGO

**HOMO  
SAPIENS  
(NEANDERTHAL)**  
LIVED 200,000  
TO 35,000  
YEARS AGO

**HOMO  
SAPIENS  
(MODERN)**  
LIVED 35,000  
YEARS AGO  
TO PRESENT



careful planning and cooperation—which all points to a high degree of intelligence.”

Neanderthals also had the ability to make fires and keep them in control. They started fires by striking sparks from rocks and using dried fungus as kindling. Old hearths show that Neanderthals warmed their tents and caves by burning wood or bones. “There are lots of burned bones lying around the sites,” adds Smith. “This means they may have cooked their meat and then used the bones for ‘firewood.’”

## A Kinder, Gentler Notion

In spite of all their survival skills, life for Neanderthals was short and harsh. Less than 10 percent lived past the age of 35. Even so, Neanderthals made time for kindness. One male skeleton found in a cave in Iraq had a clubfoot and a withered arm. Only caring companions could have helped the man survive to the ripe old age of 30.

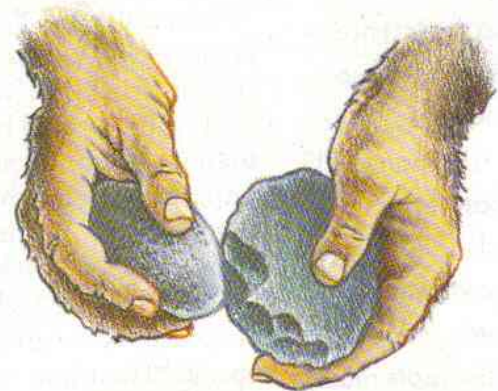
Neanderthals were also the first people to bury their dead. Scientists have dug up more than 150 bodies, almost all of them found in caves. “The skeletons lay in holes dug in cave floors,” Trinkaus told CONTACT. “Many had been placed in sleeping positions along with food and flowers.” Trinkaus says that this might mean Neanderthals believed in an afterlife. “But it definitely shows that they cared enough about each other to take the time to bury their dead.”

The last Neanderthal mysteriously disappeared about 35,000 years ago. Anthropologists still don’t know what happened to them. But, then again, much of the Neanderthal’s *existence* remains a puzzle. “Piecing together the way Neanderthals lived and died is a lot like putting a jigsaw puzzle together,” Trinkaus points out. “But in this case, most of the pieces are missing and there’s no picture on the cover of the box!” ♦

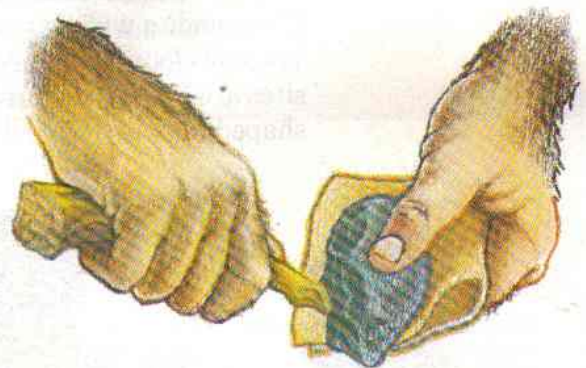
PHOTOS © E. TRINKAUS/UNIV. OF NEW MEXICO

# STONE AGE TOOLKIT

Neanderthals weren’t flakes, but their tools were! Each one was made from thin, sharp-edged flint flakes.



1. How do you make a flake tool? The flake is first roughly shaped with a stone hammer.



2. The flake gets even more definition by using a softer hammer of bone or antler.



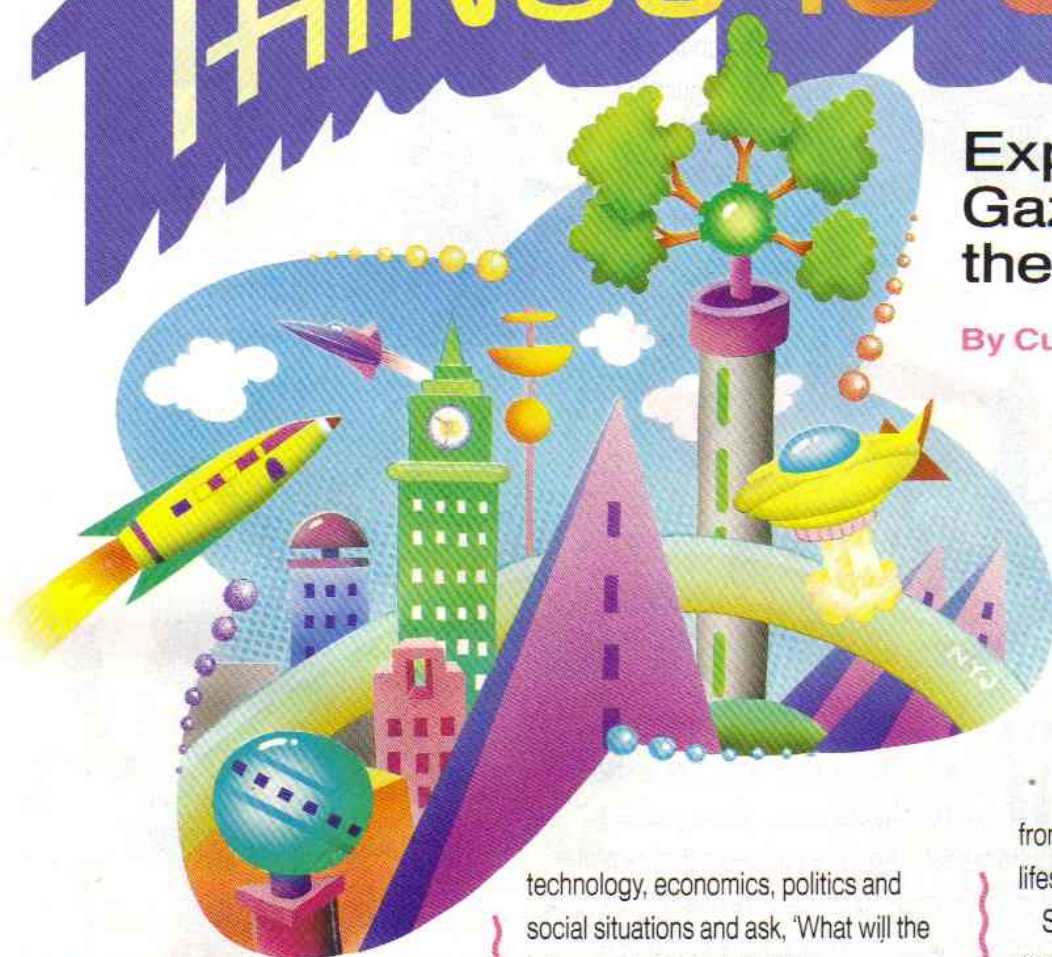
3. The edges are trimmed by applying pressure and presto! The knife is ready to use.



# THINGS TO COME

## Experts Gaze into the Future

By Curtis Slepian



**M**arvin Cetron has an unusual job. He is paid to predict the future.

Cetron isn't some phoney fortune teller. He is a futurist—an expert who uses current information to figure out where the country and world are going, and what the future holds.

Technology is changing the world so quickly, we can't keep up. People in fields like transportation and medicine want to know about current advances and what advances the future may hold. That way, they can plan for tomorrow—today.

So companies are hiring futurists like Cetron to predict trends that will one day affect their products and businesses. Cetron told CONTACT, "I look at

technology, economics, politics and social situations and ask, 'What will the future probably look like?'"

Cetron doesn't take wild guesses. First, he gathers thousands of statistics (figures) and feeds them into big computers. Then, with the help of experts, he studies the computer read-outs and makes his forecasts.

Predicting things like weather trends and population growth is pretty scientific. That's because these forecasts use huge amounts of numbers and calculations. But, according to Timothy Willard, forecasts about society are less scientific. You see, people are a lot more, well, unpredictable.

Willard is an editor of a magazine for adults called *The Futurist*. In it, experts write about future trends in all areas—

from computers and technology to lifestyles and education.

Sometimes predicting the future is pretty tough. For instance, Willard told CONTACT, "In the 1970's, futurists predicted marriage would soon end—and that hasn't been the case at all."

Thinking about the future is good sense. "In order to have the future you want, you must figure out what you want and then help create it," says Andrew Lawler, a former editor at *The Futurist*.

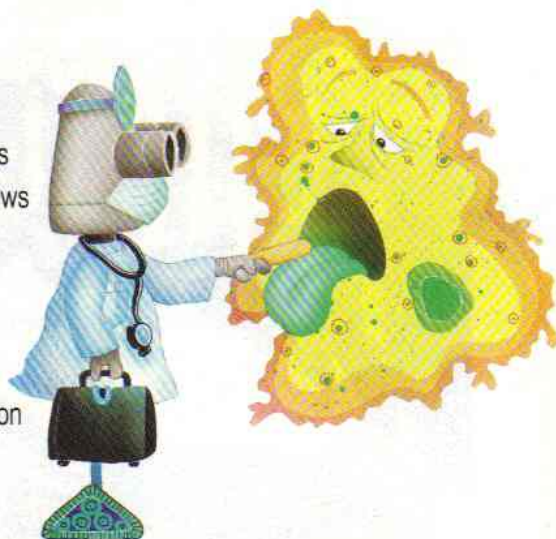
Adds futurist Gareth Branwyn, "Studying the future and deciding what future we want and working to make those changes—that's the thing that's going to help us."

Turn the page for a glimpse into the future!



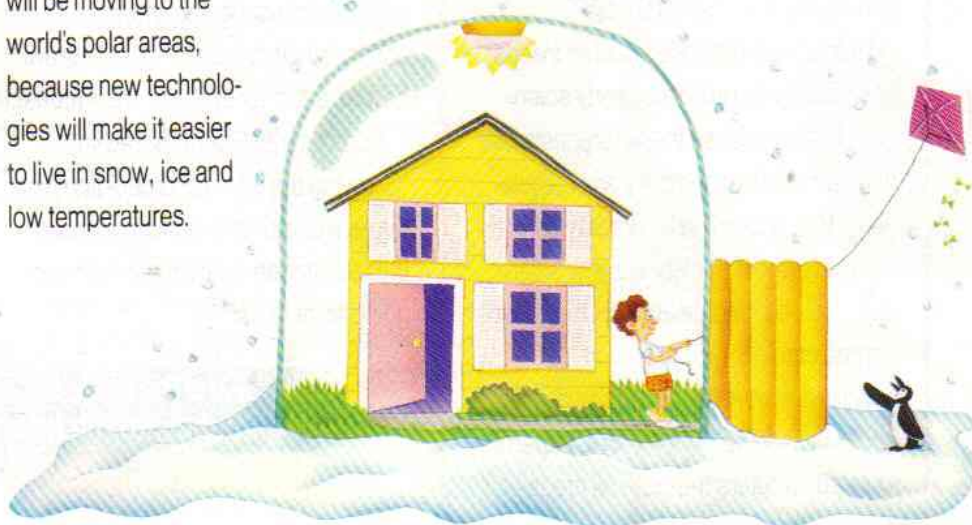
Here are  
some peeks at the future,  
from *The Futurist* magazine.  
Some things may take place  
in a few decades or less.  
And some may never happen.  
After all, no one really knows  
what the future  
holds!

**T**iny robots may perform surgery inside a patient's body. After a patient swallows the "microrobot," a human surgeon will guide it to the trouble spot. The doctor will guide it with the help of a 3-D computer simulation of the patient's insides.



**W**hat will be the "in" food of the 1990's? No, it won't be oat-bran pizza. It'll be...buffalo! Buffalo meat not only has 30 percent more protein than most other meats, it's more healthful: It has 50 percent less fat and 70 percent less cholesterol than, say, beef or pork.

**S**anta won't be the only person with a North Pole address. In the future, people will be moving to the world's polar areas, because new technologies will make it easier to live in snow, ice and low temperatures.



**T**o fill their classes, colleges will be trying to attract much older students. Many freshmen may be 65 years old or older! And kids will be going to school for seven hours a day instead of six and a half. They'll also be going to school at least one extra month a year.



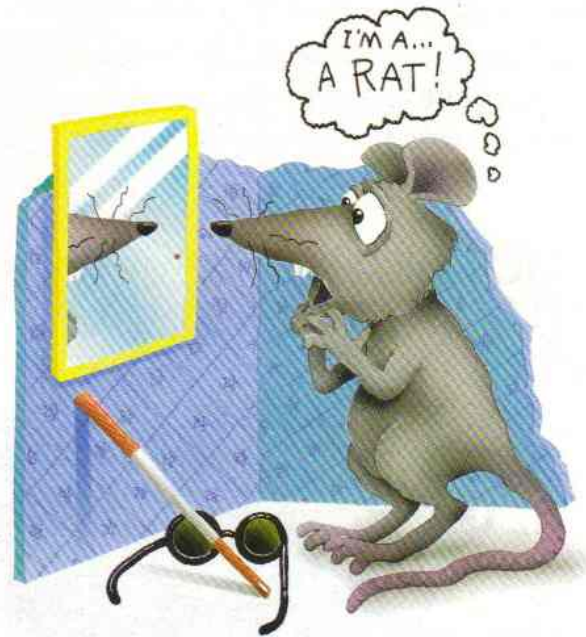
Future astronauts won't be sipping bottled mineral water—they'll be drinking asteroid water! Because water is too heavy to ship into space in large amounts, other sources for it must be found—like asteroids! Asteroids have no atmosphere, but they do have clay-based materials that hold water and may be mined for drinking water.



One day, the blind may see. Scientists hope to give sight back to the sightless by transplanting light-sensitive cells into their eyes. Already, researchers have done similar transplants in the eyes of rats.



Tomorrow's hot fashions will be designed with the environment in mind. For example, awesome future clothes may be head and shoulder coverings that shield wearers from the sun's dangerous ultraviolet rays. And people might walk down the street proudly wearing a transparent helmet that keeps out smog and bad odors.



Computers may one day be living things. Proteins are the building blocks of living tissues. And scientists have made protein molecules that can conduct electricity. Eventually, they may be placed inside computers. These "living biochips" will be smaller, faster and less hot than silicon chips. Special living biochips could sense sound or touch or smell. For example, one of these biochips could be able to "smell" poison gases in a factory and shut down the equipment.

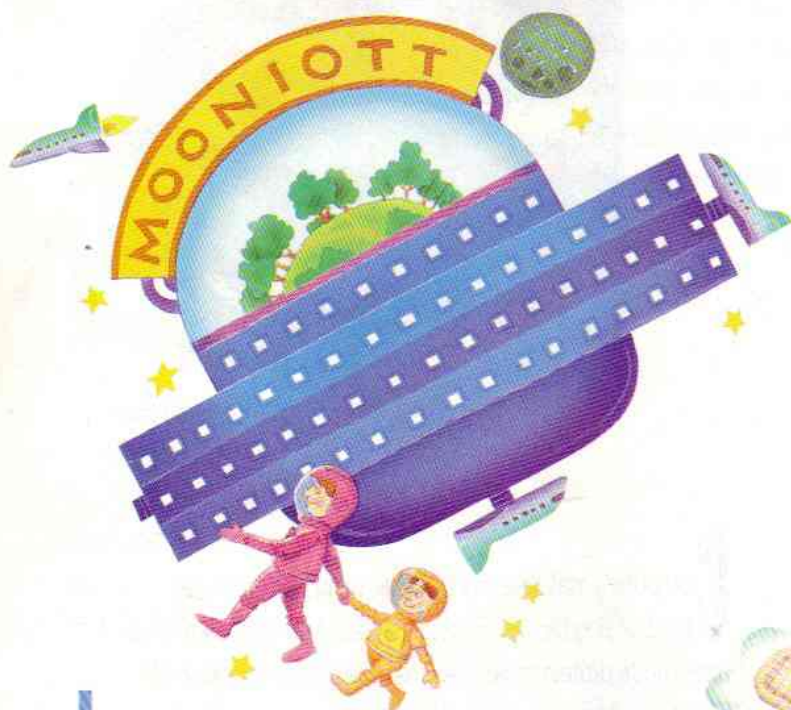
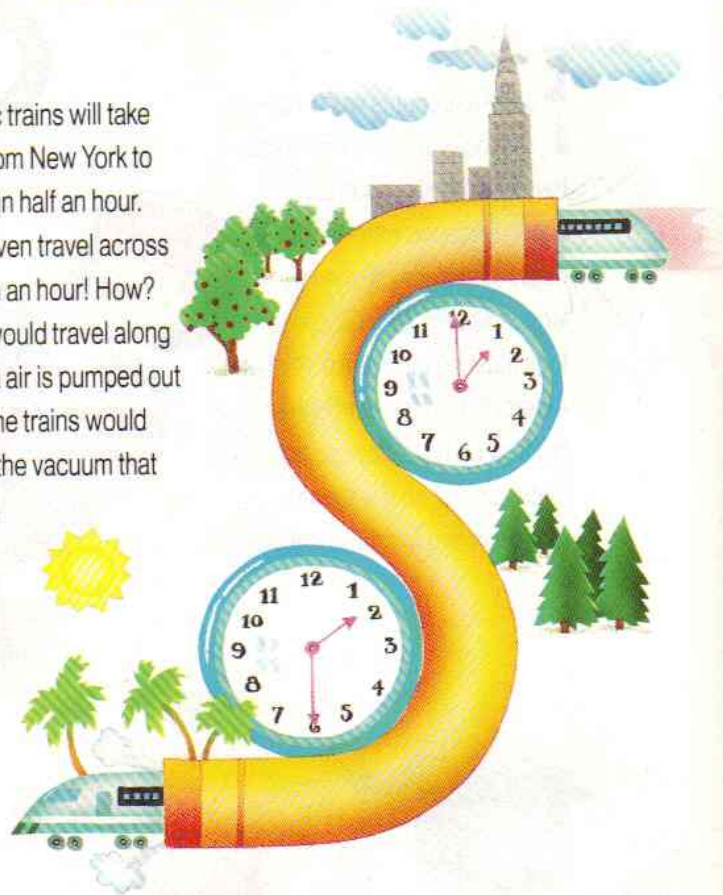






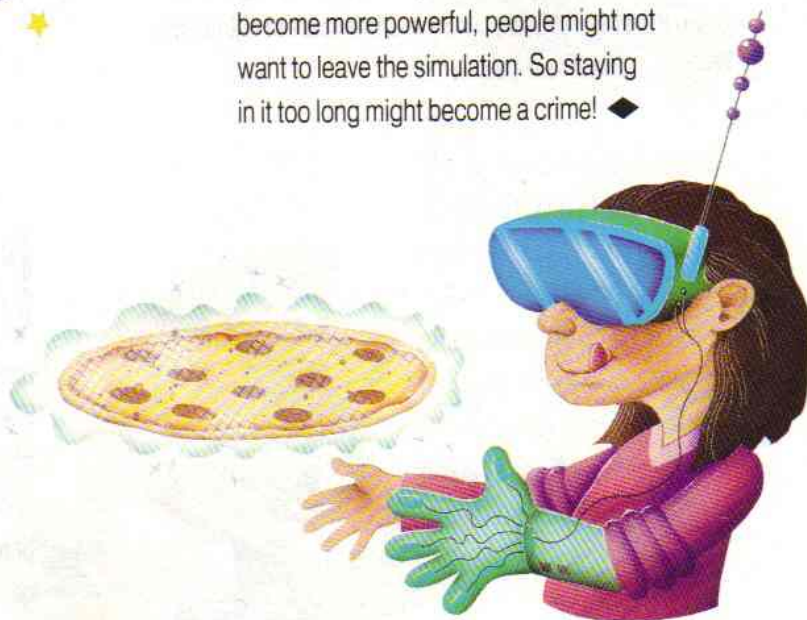
**R**eal food will be produced artificially. Instead of growing whole plants in the ground, certain cells of the plants will be grown separately. These cells will produce only a certain part of the plant, like the inside of an orange. This way, you can get orange juice without the skin—and without trees!

**H**ypersonic trains will take people from New York to Los Angeles in half an hour. They might even travel across the Atlantic in an hour! How? The “trains” would travel along a tube. When air is pumped out of the tube, the trains would “fly” through the vacuum that was created.



**I**n 30 years, it's possible that a space hotel will be open for business. Tourists will be able to take space walks and play zero-gravity sports, as well as go on side trips to the moon. Guest rooms will have artificial gravity, so taking a shower won't be a washout.

**T**he real danger in the future may not be drugs, but “virtual reality.” Virtual reality is a 3-D world created by a computer. People can enter and control this “world” by wearing goggles and a special sensor glove. Virtual reality already exists. But when the computers that create it become more powerful, people might not want to leave the simulation. So staying in it too long might become a crime! ♦





# Lisa Frank® Products Make For Best Friends

The Lisa Frank® lifestyle includes doggies. The cute guy pictured here is a new member of the family. His name is Caymus, he's a Golden Retriever. Now Lisa has 2, the big guy (pictured below) is Casey.

**Lisa Frank® packages friendship. All of her products are happy, colorful, and outrageously fun.**

Lisa Frank makes your favorite designs and products, from stickers, stationery and activities to school accessories, party favors and so much more. They are like best friends, like our puppy (Caymus), he's so loveable and cute. So are Lisa Frank products, happy, colorful and cute, they make for best friends.

Get your Lisa Frank T-shirt. It's cool and comfortable because it's oversized and made of the best quality 100% heavyweight cotton! Receive yours for only \$14.95 plus free postage and handling. You'll also receive fashion Lisa Frank Stickers. Order today, so you can be outfitted for fun with your Lisa Frank T-shirt.

## Lisa Frank®

**KIDS LIKE YOU  
GOTTA HAVE IT™**

Find Lisa Frank products  
at Food, Drug, and  
Discount Department  
Stores.



Please send me \_\_\_\_\_ Lisa Frank T-Shirt(s) for just \$14.95 ea. Every Lisa Frank T-Shirt includes fashion stickers. Plus free postage & handling.

CHECK YOUR SIZE: S (16 1/2" W X 27" L) M (18 1/2" W X 29" L) L (20 1/2" W X 30" L)  
All Sizes Are Oversized.

Send to: Designer T-Shirt Offer  
P.O. Box 5586, Tucson, AZ 85703-0586

Name \_\_\_\_\_ Age \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Order now. Limited quantities. Checks or money orders only. (NO CASH!)  
Payable to Lisa Frank, Inc. Arizona residents add 7% sales tax.  
© Lisa Frank, Inc. Allow up to 6 weeks for delivery.

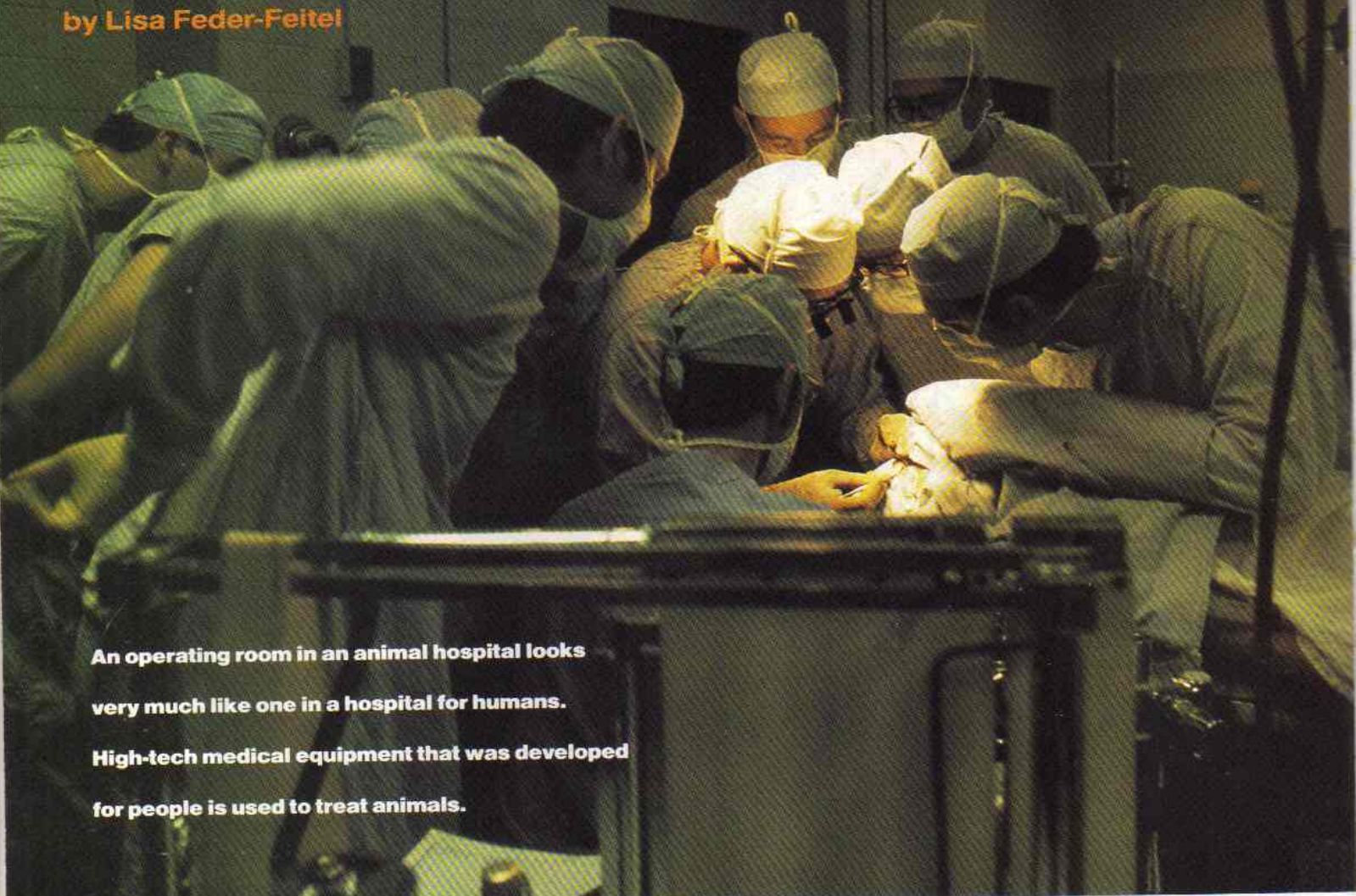




# CAT SCANS

HIGH-TECH MEDICINE CAN SAVE ANIMALS, TOO

by Lisa Feder-Feitel



An operating room in an animal hospital looks very much like one in a hospital for humans. High-tech medical equipment that was developed for people is used to treat animals.

Marjorie Shaw was upset. Her normally active, bright-eyed 13-year-old was wandering around the house, bumping into furniture and walls. When it was clear that her teenager couldn't see, Marjorie rushed her to the hospital.

There, a team of medical experts used a CAT scan—a machine that makes computerized images of the insides of the body—to check out the patient's brain. As the teen was wheeled into the CAT scan room, a doctor placed a hand on her fore-

head and comforted her. Within moments—and without pain—the scan was complete. It showed doctors that the teenager had been suddenly blinded by a brain tumor.

Several times over the next few weeks, the patient lay on a table as invisible cobalt rays destroyed her tumor. By the end of the treatments, the patient had gotten her sight back.

This kind of modern medical “miracle” is not so unusual. What is unusual is where it took place:



The patient's sight was saved at the Animal Medical Center in New York City. Marjorie Shaw's 13-year-old was her dog, Echo.



## First Class Care for Fido

Echo's story is not unusual. The same treatments, high-tech machines and medicines that were developed to help save people's lives are now being used to help save the lives of animals. So, animals, as well as humans, are living longer, healthier lives.

"Veterinary medicine can do anything on cats and dogs that we can do on human patients. I like to say we work out the 'bugs' on humans. Then when it's safe enough, we find ways to use the same procedures on animals," jokes Dr. Michael Garvey. He is a veterinarian (animal doctor) at the Animal Medical Center in New York City.

PHOTO © WALTER CHANECHA



**For many people—young and old alike—a pet is a member of the family. Because of this, many owners spend a great deal of money making sure that their pets stay healthy.**

Many of the latest medical techniques used on pets go beyond the emergency care that Echo received. Your dog may have her cataracts (a cloudiness that fills the lens of the eye, causing blindness) removed with laser beams, just as humans do. Or your cat (like people) may have an artificial hip placed in his body if arthritis (a painful disease of the joints) sets in.

For pups whose hearts don't beat to a regular rhythm, there are human pacemakers. Pacemakers are tiny, battery-operated machines placed in a person's body to keep the heart beating in a strong and regular rhythm. The exact same machine—and procedure—is now used to keep a dog's heart in tip-top shape. In St. Petersburg, FL, the Pinellas Foundation gives donated human pacemakers to vets, who use them on needy dogs.

Not all pets are physically ill, however. Some have emotional problems or fears. If a pet's problem is psychological, there are therapists to handle that, too. Does your dog hide and shake under the bed during thunderstorms? Suzanne Johnson

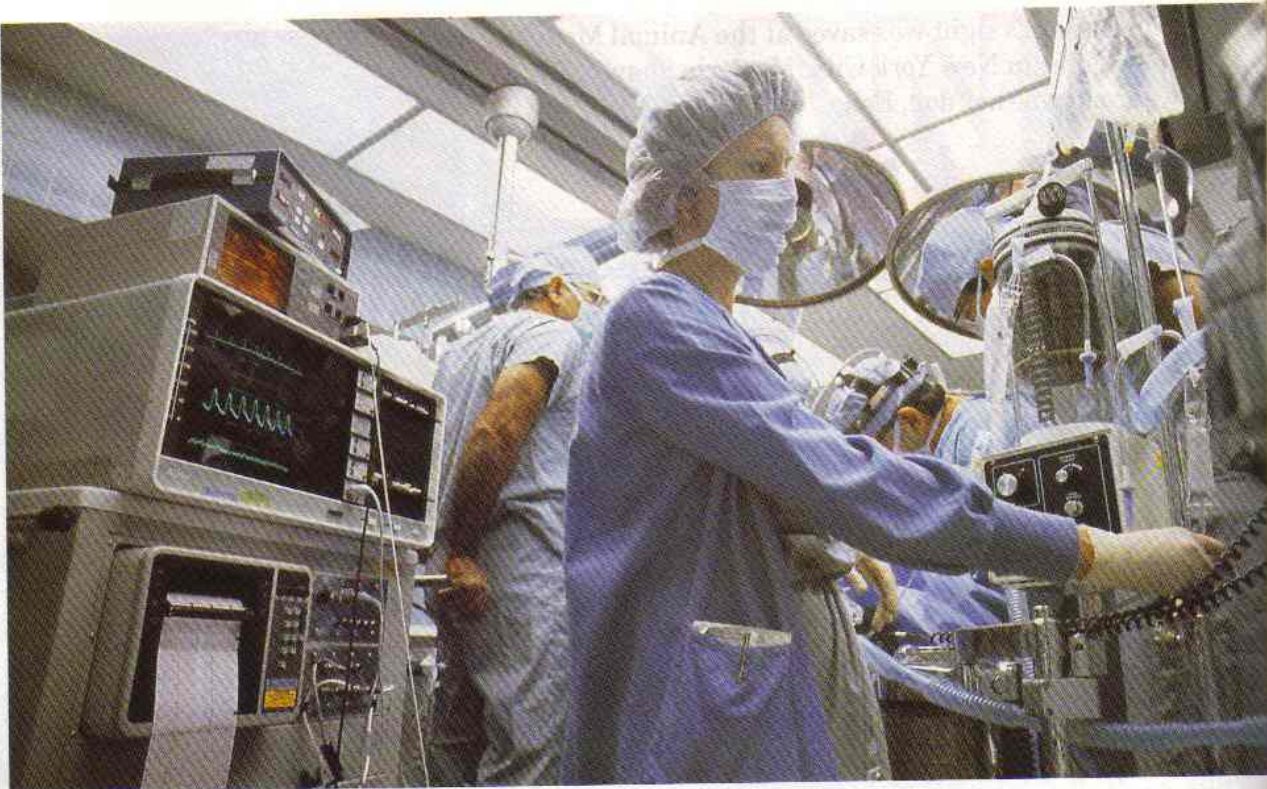


PHOTO © ED ECKSTEIN/PHOTO TAKE NYC

PHOTO © GARY S. CHAPMAN/IMAGE BANK



**A doctor checks instruments as she prepares her animal patient for an operation.**



of Beaverdame, VA, might be able to calm the pooch down.

Ms. Johnson is one of about 40 animal psychologists in the U.S. who treat fearful, aggressive or unhappy pets. To treat a fear of thunder, for instance, she may put the dog in a room and play a tape recording of a storm. She'd start at low volume, and increase it until the dog hardly notices the-booming noise. It may frighten the owner, though!



## Good Health at Great Cost

Now that veterinarians are using high-tech equipment, advanced techniques and new medicines, pets are living longer and healthier lives. That's great news for animals and their owners. But there's also a down side to this story. A pet's good health can carry a very high price tag.

Marjorie Shaw's bill for Echo came to \$3,000. Cataract surgery can cost between \$600 and \$1,200 an eye. A pacemaker can be fitted for \$1,500. Americans spent nearly \$6 billion on veterinary services in 1987. That's about one billion more than they spent in 1985, when the last survey was taken.

**Humans aren't the only animals who get X-rayed. This X-ray of a cat's intestines helps doctors locate possible problems.**

**Laser surgery on cats (and dogs) with eye problems is common. An infrared light is used as part of the operation to remove cataracts.**







## Troubling Questions

These higher costs and new treatments may also force veterinarians and pet owners to make difficult choices: When should care for the pet continue, and when is it more kind to the pet to stop it?

Dr. Garvey of New York's City's Animal Medical Center uses the example of a 15-year-old cat whose kidneys stopped working. "The animal may respond to treatment and do very well for months to years," he says. "On the other hand, the cat may live only for a few days or weeks. It will cost the owner several hundred dollars to find out. What should be done?"

Dr. Mike Shires of the University of Tennessee at Knoxville has dealt with another troubling problem: an owner's inability to see what is best for his or her pet.

"Many people seek all sorts of extreme medical treatments for their pets that weren't available a

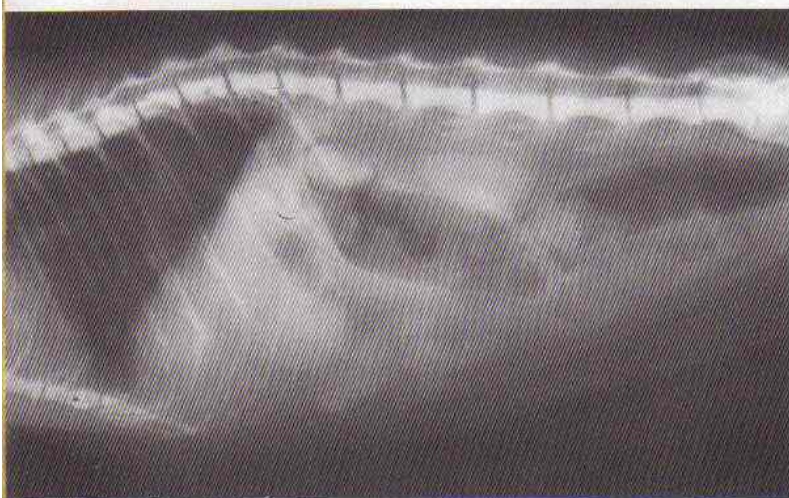


PHOTO COURTESY ANIMAL HOSPITAL OF CHELSEA

few years ago," he says. In cases where continued treatment is cruel, he recommends that the pet be put to sleep. If an owner still insists, he says, "We tell them to take their pet some place else."

Some doctors believe in treating pets and owners with equal care. Dr. Jane Mason, from Chantilly, VA, says, "I don't push the medical advances on owners with older pets or ones whose chances of a pain-free life isn't good."

Deciding how far a person should go in saving his or her pet is becoming a common question. Humans who are seriously ill can usually say how much they want done to help them. But animals can't talk. The choice is ultimately up to the animal's owner. ♦



PHOTO © WALTER CHANDOLA

## HEALTH FOOD HEALS PETS

Kiss the canned dog food goodbye. Instead, treat your pup to a dish of yogurt or steamed broccoli. Or if your pet has fleas, try soaking its collar in oil made from eucalyptus (say: *you-kah-LIP-tus*) leaves or sprinkling garlic on its supper. Yes, garlic!

Healthful foods make healthy pets, says Dr. Monique Maniet, a veterinarian in Takoma Park, MD. She practices a kind of care for pets that some doctors use on humans. It's about as far from high technology as Maryland is from Madagascar. Called holistic medicine, it encourages the use of natural foods and soothing herbs.

Vaccines and antibiotics do have a place in Dr. Maniet's medicine cabinet, however. But she prefers to use more natural cures. If your pet suffers from swollen joints, for example, she might inject it with some honeybee venom. You might say that the poor pet gets stung twice, but Dr. Maniet says it helps a lot more than it hurts!

Should people use holistic or high-tech treatments with their sick pets? Always discuss it with your veterinarian. And never try any treatments, or give your pet any medicines, yourself. Always put your pet under a doctor's care. ♦



# The most fun in a lunchroom w in the Princ

The problem with a lot of ways to have fun in the lunchroom is that they'll get you a one-way ticket to detention.

**A**

For example:  
Goggle-eye glasses.  
Look just like your  
math teacher in  
one easy step!!

**B**

Home economics  
experiment.  
See how wood  
reacts to  
cafeteria gravy!

**C**

Salamander (or any  
lizard type). Put it on  
your plate and tell  
everyone it's the  
mystery meat of the day.

**A**



**B**



**C**



GENERAL FOODS USA  
Copyright 1990 Kraft General Foods, Inc.  
Kool-Aid Koolers is a registered trademark of Kraft General Foods, Inc.



# you can have without ending up in principal's office.

**Nintendo**  
**POWER PUZZLERS**  
**SUPER MARIO BROS. 3**  
#281

**Mario's Maze**  
Guide Mario through the maze.  
Unless you're silly, this won't take  
days.

**NINTENDO POWER**  
**SUPER MARIO BROS. 3™**  
**TIP:** Earn a P-Wing after  
completing World 3-8 by  
collecting 44 Coins.

Call 1-800-921-0900 to subscribe to  
Nintendo Power™ magazine.  
Nintendo, Nintendo Power and Super Mario  
Bros. 3 are trademarks of Nintendo of  
America Inc. © 1991 Nintendo

**Kool-Aid**  
**Koolers** JUICE DRINK  
**Tropical Punch**

**Kool-Aid Koolers®** has a whole mess of  
terrific games, puzzles, and mazes on  
the back of the box and a wildly fruity  
juice drink inside. So they're the kind  
of fun you can enjoy without ever having  
to say you're sorry.

**KOOL-AID KOOLERS®**  
JUICE DRINK

*When The Drink Is Done, There's Still More Fun.*



# RINGS OF CONFUSION

**ENGLAND'S  
MYSTERIOUS  
CIRCLES HAVE  
SCIENTISTS  
BAFFLED**

*By Russell Ginns*

Something strange is happening in the wheat fields of England. Farmers going out to tend their crops are finding that their fields have been flattened into strange circular shapes. Some are a few yards in diameter. Others are more than 500 feet long. And none of them appears to be the work of human hands.

The center of attention is an area in three counties in England known as "The Wiltshire Triangle." In the past few years, several hundred circles, rings, spirals and other mysterious formations have been discovered there.

Could these patterns be signals sent from UFOs? Are they the results of top-secret weapons tests, a strange new fungus or mysterious tiny tornadoes? Or are they just a trick? So far, no one has been able to agree on one explanation. And, as more and more of the circles are appearing every morning, people are getting more and more curious.

## **Signs of Intelligence?**

"It's a mystery," says Colin Andrews, an electrical engineer who has been studying the circles for many years. "There is no question that the circles are beyond physics and science as we know it."



Because the circles are perfectly shaped, Andrews believes that the formations are definitely the work of some form of intelligence. "I don't rule out extra-terrestrial intelligence," he adds.

Last year, Andrews organized Operation Blackbird. He and a team of researchers set up an assortment of sensors and cameras in a field in the heart of the Wiltshire Triangle. The team was hoping to catch some circle-forming as it happened. Sure enough, one night in August, a series of flashing lights appeared on their sensors. The next morning, circles were there in the field. Unfortunately, the incident turned out to be a prank. Andrews' infrared cameras picked up the body heat of humans as they trampled down the corn.

"Our location had become known," he explains. So it was easy for people to come and play a trick on him. But Andrews isn't giving up. He believes that many of the circles that have been found across England are "genuine." He continues to research the circles to this day, and has written several books on the subject.

## Blowin' in the Wind

Others aren't so sure that the circles go against any laws of science. Terrence Meaden of the Tornado and Storm Research Organization says that the circles might be the result of spinning columns of air. The columns swirl through the crops, tangling them into the odd patterns.

So far, Meaden hasn't caught one of these whirlwinds in action, though. "It's like trying to film a road accident as it happens," he says. "It's not that the event isn't common. It's that you've got to know where to be ahead of time, and to have your cameras rolling before the action starts."

To Meaden, people who believe in UFOs or supernatural forces are a "nightmare." He thinks it's

**The wheat has been flattened neatly. But none of the stalks has been broken.**



PHOTOS: MAXINE HIGGS





**Is an alien intelligence  
at work here? Or is  
it a trick?**

that their wild ideas attract tricksters. "It makes it very hard for me to convince the scientists of the world that these circles deserve serious study," says Meaden.

### **Theories Galore**

Alien intelligence and columns of air aren't the only two explanations. Jean-Jacques Velasco, of France's space agency, suspects that the circles are the results of weapons tests in outer space. According to Velasco, there is no natural force that can form rings on the ground. Instead, he believes the British government is firing energy beams into the sky and reflecting them back into the wheat fields. There is, in fact, a British military base located near an area that contains many of the circles. But no one in the British government has admitted that any test of this kind took place.

Other theories include helicopters flying upside-

down over the crops, a new kind of soil disease, crazed animals stampeding in circles, a deadly fungus, witchcraft and solar radiation. The list goes on and on.

Still others are convinced that it is all one big prank.

"I don't think there's any great mystery to it," says James Randi, an expert at tracking down hoaxes. "We did a bit of experimenting in a field in Florida. We drove a peg into the ground. I took a big piece of chain and hooked it on the peg, and then walked around in a circle with it." Randi claims that the result is a perfect circle.

But does this explain all of the hundreds of strange patterns? How come none of the farmers have been able to catch any of the pranksters in the act? The mystery continues. And the search for answers may have the experts going in circles for years to come. ♦

**The crop formations  
come in all sorts  
of strange shapes  
and sizes.**

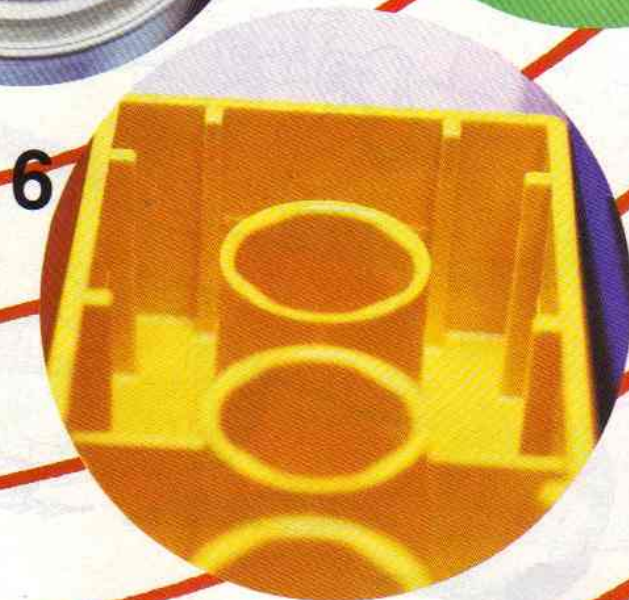




# MORE MYSTERIOUS CIRCLES

A CONTACT PUZZLE

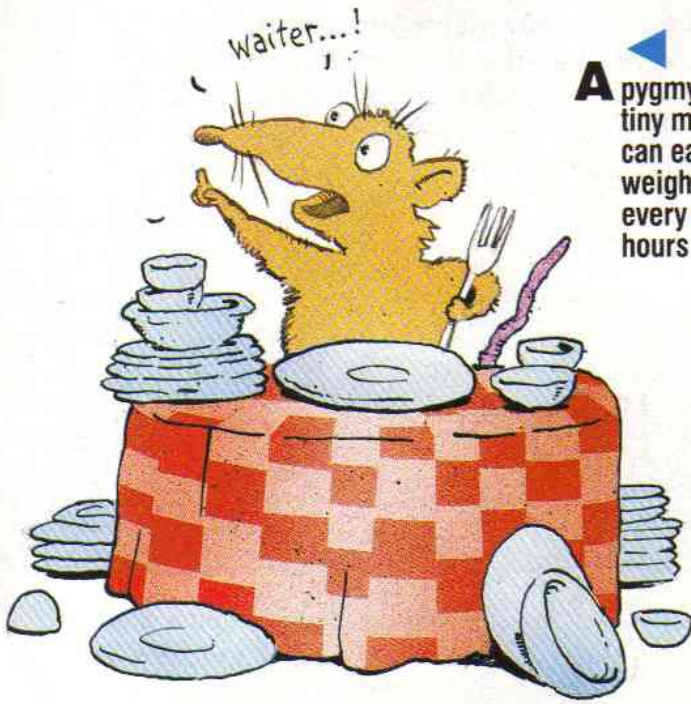
The circles in England's corn fields are strange. And these six circles are even stranger. But look closer and you'll see that they aren't so mysterious. In fact, they are everyday objects. Can you guess what each one is? Then look closely at the Did It page for the answers.



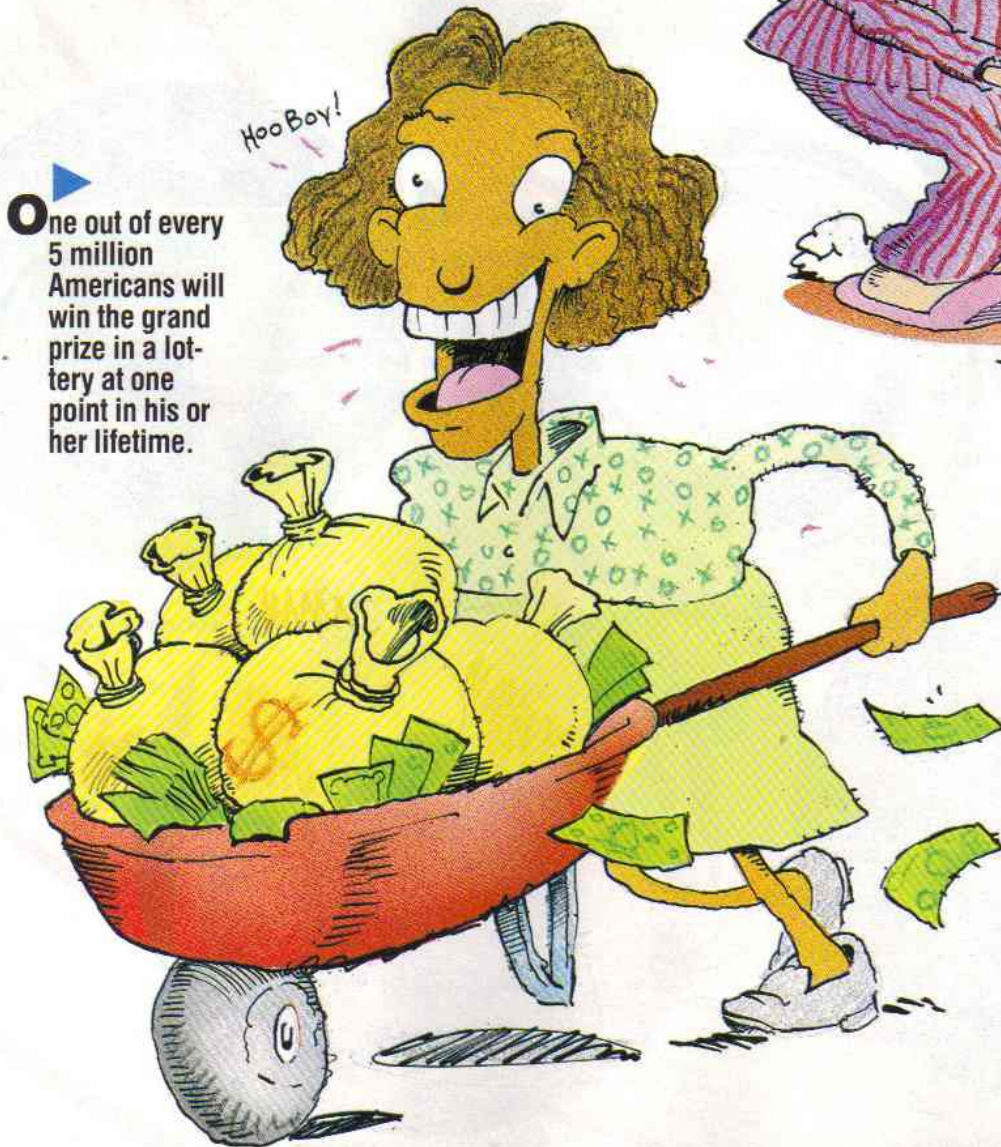
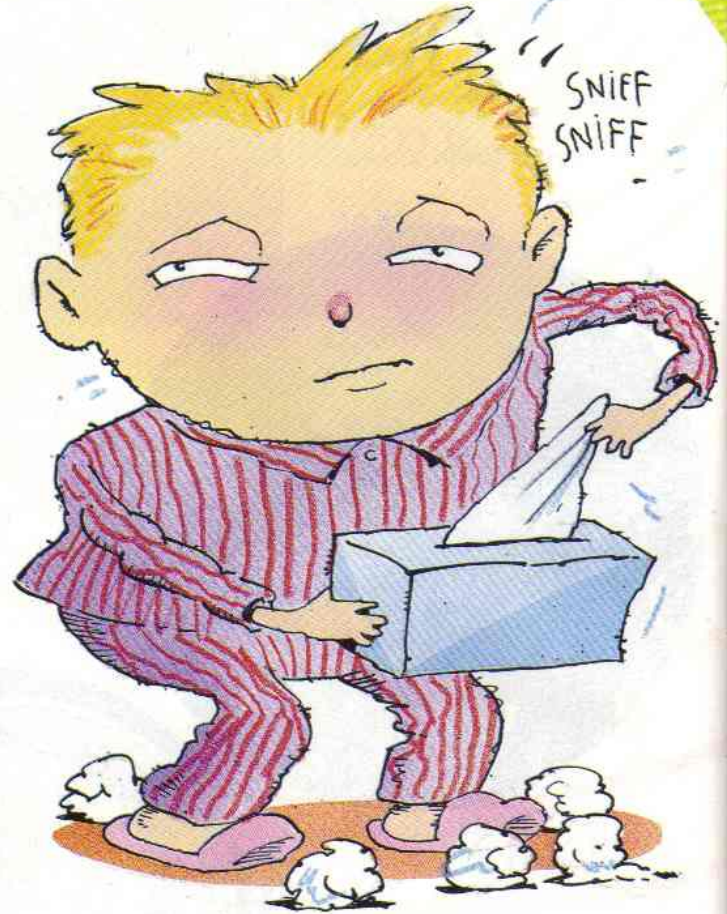
PHOTOS © KEITH OLSON



# FACT



**A** pygmy shrew is a tiny mammal that can eat its own weight in food every three hours.



**O**ne out of every 5 million Americans will win the grand prize in a lottery at one point in his or her lifetime.

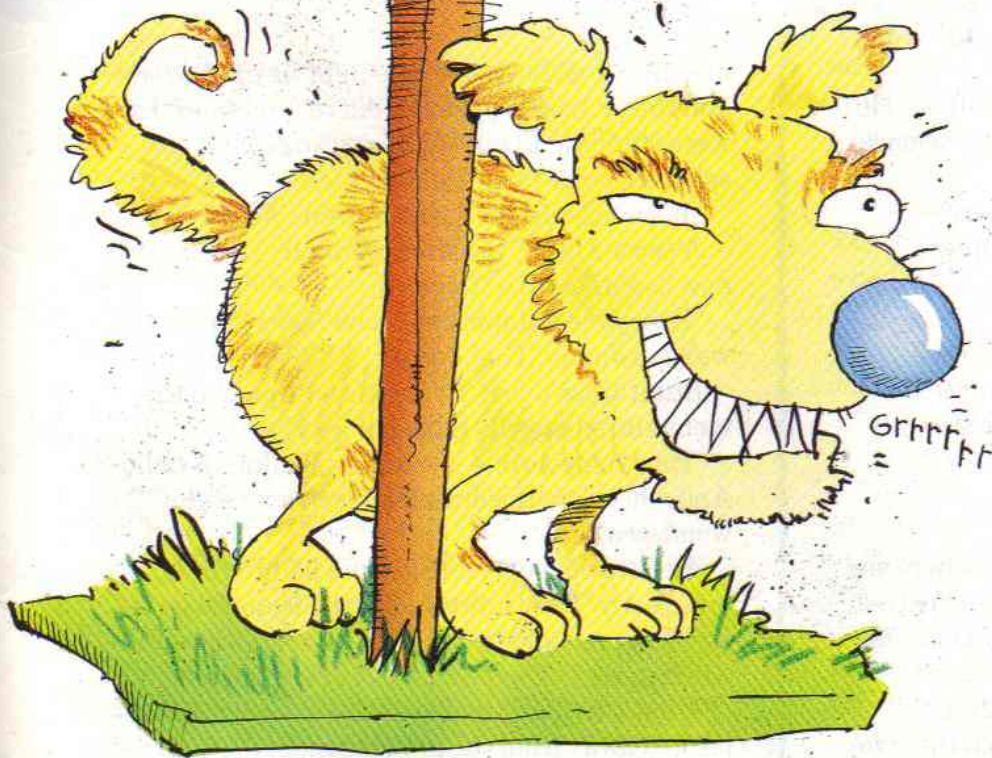
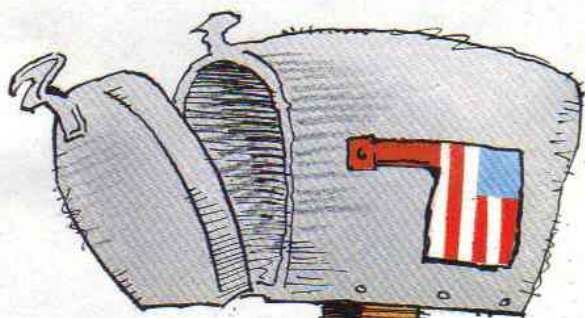
**B**oys are more likely to catch colds than are girls.



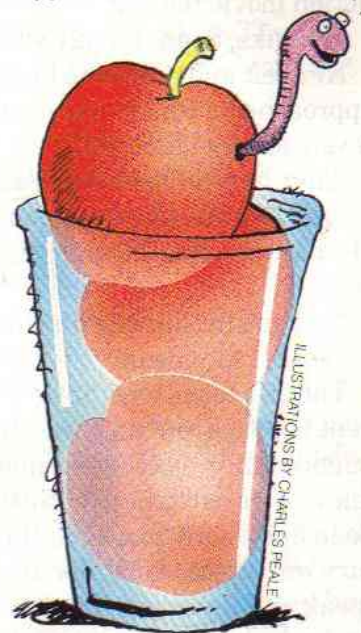
# Olds

**B**ald eagles can build nests that are 20 feet deep and more than nine feet across.

**T**here are 100,000,000 mailboxes in the U.S.



**I**t takes three apples to make one glass of apple cider.



ILLUSTRATIONS BY CHARLES PEALE



# THE TIME TEAM

## The Nick of Time

By Curtis Slepian

"Thank you for talking about your family's roots, Olaf." Mrs. Sparse turned to her social studies class and said, "Tomorrow, please be prepared to talk about your family's background." She suddenly fixed her eye on someone in the back of the room. "Sean, am I keeping you awake?"

Sean Nolan, who had been zoning out, blurted, "No...I mean yes...I mean..."

The bell rang. Mrs. Sparse glared at Sean and said, "Class dismissed."

As the students rose to leave, Ken Morita came up to Sean: "I want to buy a pair of those water-pump basketball sneakers, but I'm short five dollars. Can you lend it to me?"

Sean took out his wallet. He had 12 dollars. He could give Ken five and still see that new science fiction movie tonight.

"Thanks, Sean. I'll pay you back tomorrow."

Ken left and a minute later, Jenny Lopez approached with her hand out. "Sean, I need the seven dollars I lent you."

After he paid her back, Sean's wallet was empty. "Jenny, I have no money to do anything after school. How about some free entertainment?"

"You mean the time machine?"

"Yeah!" said Sean.

The two teens went to Jenny's house, where she kept her tachyon machine. This was the greatest science fair project ever made—but only the teens knew of its existence. Without saying a word, Sean and Jenny placed in their ears a 21st-century universal translator, which allowed them to speak and understand any language. Then Jenny pressed a button on the side of the tachyon

machine. Suddenly, a white light lit up the room and the teens disappeared. An instant later, they were standing in an empty city street. An ear-splitting noise hurt their ears.

"It sounds like an air raid siren," yelled Sean.

A second later, the siren went off. The streets now began to fill with people.

"Everyone is Japanese," said Sean. "I guess we're in Japan. That's cool."

But it wasn't cool. Everyone who passed the teens stared angrily at them.

"How come no one is wearing Walkman radios? And where are the amazing electronic stores?" wondered Jenny.

A crowd of people formed and pointed at Sean and Jenny. They muttered at the teens: "Those foreigners should be stopped." "Yes, they could be Americans." "Maybe they're enemy spies."

What was going on here? The kids nervously backed away from the growing mob, then darted down a deserted side street.

At the end of the street, the kids rested for a



ILLUSTRATIONS BY BOB PEPPER



"You've got to believe us. Get as far away from the city as possible!"



moment. Through an open window they heard a news report on the radio: "The Emperor warned the nation about a possible attack by the American army. Yesterday, in the Pacific, our brave sailors fought the naval forces of Douglas MacArthur..."

The kids eyes bugged opened. "No wonder the people here look at us strangely," exclaimed Jenny. "This is World War II, when the U.S. and Japan were enemies!"

### A City in Danger

Then, from the radio, they heard a sentence that froze them: "The weather for today, August 5, 1945, will be warm and sunny here in Hiroshima."

"Hiroshima," whispered Sean. "That's the city the U.S. dropped an atom bomb on."

"We never should have dropped the bomb," said Jenny angrily. "It killed about 100,000 people, and many more died later from the radiation the bomb gave off."

Sean disagreed. "We had no choice. The Japa-

nese would never have surrendered unless we dropped the A-bomb. The war would have gone on a lot longer, and many more Japanese and Americans would have died."

One thing Sean and Jenny agreed on: They couldn't change history. The bomb would fall. But when?

"I just read a book about Hiroshima," said Jenny, "but I don't recall what date the city was destroyed."

"Try to remember," urged Sean.

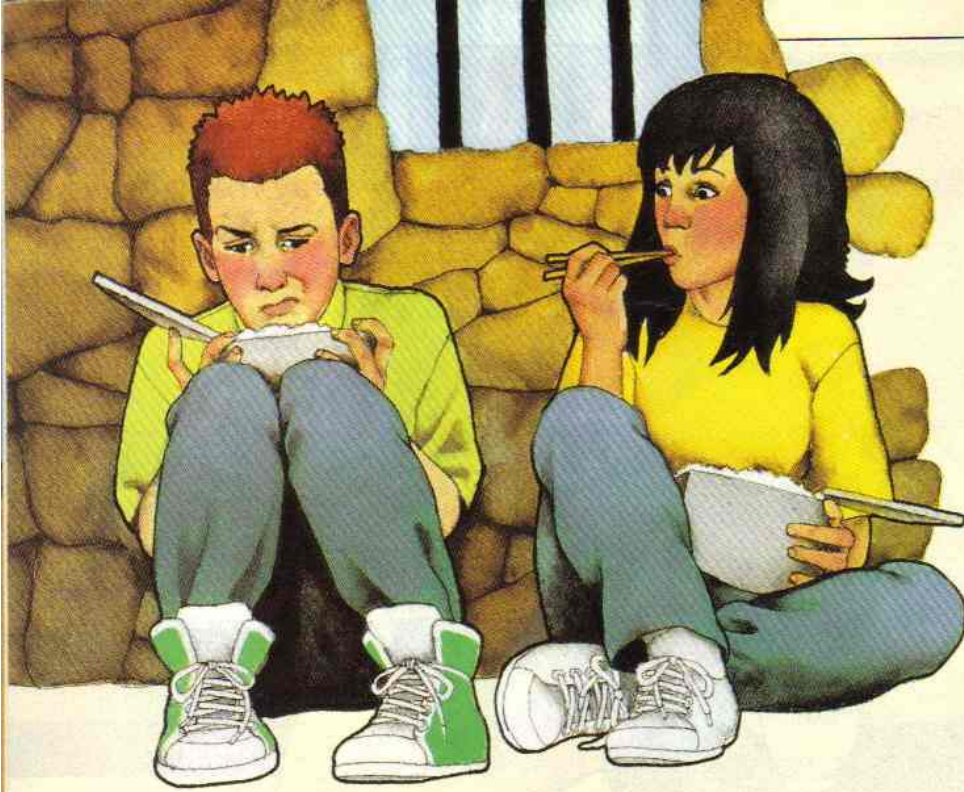
Jenny shook her head. "I can't."

"Well, we should warn as many people as we can about the bomb," said Sean.

They walked towards the center of Hiroshima. Each time they tried to explain the terrible danger, people either laughed at them or threatened to call the police or soldiers.

Feeling helpless, the teens walked past a domed building. Nearby, a kid about their age was just leaving his house. They ran up to him. He said his name was Kiyoshi, and he was a high school





student. He invited Sean and Jenny into his house. As they entered, they all took their shoes off.

Inside, sitting on a straw mat, Sean looked around at the walls and sliding doors made of a kind of paper. You couldn't fool around too much in this house or you'd punch holes in the walls. Kiyoshi offered them tea.

"You must leave the city immediately," urged Jenny. "The U.S. is going to drop a terrible bomb on it. It will create more heat than the sun, vaporize metal, send out harmful radiation. It will flatten the entire city."

Kiyoshi smirked. "I've never heard of a bomb that could do that."

"You've got to believe us," pleaded Sean. "Get as far away from the city as possible."

"When is this going to happen?" smiled Kiyoshi.

"We're not sure, but it may be soon."

"How do you know all this?"

The kids looked at each other. Kiyoshi would never believe the truth, so Sean made up a story: "We heard the rumor on a radio that picks up American news."

Kiyoshi frowned. The story sounded crazy, but the two foreigners seemed so serious. "Thanks for the warning, but I've got to go to air raid practice today." Suddenly, they heard a noise outside. Kiyoshi went to the window: "It's the police. Someone must have seen you come here. You'd better leave."

The kids left through the garden in the back of Kiyoshi's house. Jenny said, "I'll hide the machine, in case the police think it's a weapon." She managed to place it under a rock just before the police grabbed them.

The teens were taken to a police station. "What country are you from?" asked the officer in charge.

Jenny said, "The United States, but we're from a time when we're not at war with Japan—except maybe over who makes better cars."

The policeman looked at them as if they were crazy. "Tomorrow we will turn you over to the army. They will find out what you are doing here in Hiroshima."

## Dawn of the Atomic Age

The teens were locked in a cell. Soon, a friendly guard came by and said cheerfully, "Dinner time, kids!" He held out a small box full of rice and raw fish.

"Sushi," said Sean. "Gross!"

"What did you expect—cheeseburgers?" replied Jenny, rolling her eyes.

An hour later, Sean was so hungry he ate every last bit of the sushi, even the seaweed.

After lunch, Sean began to worry. "Jenny, try to remember when the bomb is going to drop."

Jenny looked miserable. Then she looked terrified: "I remember! The bomb fell August 6, at 8:15 in the morning."

"That's tomorrow!" shouted Sean. "We've got to get out of jail!"

Sean and Jenny were scared. That night, both had nightmares about an A-bomb going off.

Early the next morning, the guard woke them. "They decided to take you to army headquarters tomorrow. So you'll stay here another day."

"There won't be another day," muttered Sean.

Jenny looked at her watch. It said 6:15. They had two hours to get out and find the tachyon machine.

The guard brought them breakfast, but neither teen could eat. They were frightened and numb. Jenny looked at her watch: 7:15. Suddenly, they heard sirens!

"I thought you said they dropped the bomb at 8:15," said Sean, his voice shaking.

"That's what I thought."

From far overhead, they heard the sound of an airplane. Both kids closed their eyes and held their breath. The sirens continued. Then, just as suddenly, they stopped. It was 7:31.

The guard came by. "All clear. Just weather planes sent by the Americans. They fly over every



morning. Nothing to worry about."

"That's what he thinks," said Sean. The guard opened their cell. "The commander got new orders. They are going to send you over to the army right now. Let's go."

The kids were led outside. It was a hot morning, and the kids were sweating—partly out of fear. At the back of the police station was a car. Sean and Jenny looked at each other and nodded. They knew what they had to do. As the guard turned to open the back of the car, both kids started running. "Hey, come back or I'll shoot," screamed the guard.

They kept running, even after they heard shots and the sound of bullets whizzing by. They ran through unfamiliar streets, trying to find Kiyoshi's house. Jenny's watch said 8:07. "We'll never find it in time," she said.

"Don't give up. Keep moving," said Sean.

## Countdown to Doom

They were crossing a bridge when Jenny saw it in the distance—the domed building near Kiyoshi's home! It was 8:10 when they started racing toward the building. 8:12: The building seemed no closer. 8:13: Jenny fell. Sean pulled her up and they kept running, their legs aching.

8:14: The building was a block away. People in the street were looking up. Sean and Jenny stopped for an instant—high in the sky were the white trails of a plane. They could barely make out the sound of its engines. Nobody in the street seemed worried. How could they know what was about to happen?

8:14 and 30 seconds: They saw Kiyoshi's house across the street, but the cars made it impossible to cross. Sean couldn't wait: "C'mon!"

They dodged traffic and got across the street. Jenny looked up again and saw high in the morning sky, a parachute floating to Earth. Attached to the parachute was the atom bomb. It was 8:15! The bomb would go off in seconds.

"Kiyoshi!" screamed Sean. But nobody answered from the house. They ran to the garden. "Which rock is the machine under?" yelled Sean. There were rocks all over the place! "There, under that one," Jenny

answered. Sean scrambled to his knees and dug. Nothing. "Try that rock!" He dug again—there was the time machine!

8:15 and 40 seconds: The parachute was now about a mile above the city, the bomb five seconds from ignition. As Sean nervously lifted the machine, he dropped it. Fumbling, he picked it up again. 8:15 and 45 seconds: Sean pressed the button...and a white light covered everything! Both kids screamed.

"What's wrong?" Jenny's mother had burst through Jenny's door. She saw both kids on their knees, hands over their heads.

"No problem, Mom," said Jenny weakly. "We were watching a horror movie on TV."

The next day, in class, Sean and Jenny listened to Kenny Morita talk about his family's history: "...and so my father, Kiyoshi, left Hiroshima the day before the atom bomb dropped on it. He told me that two American kids warned him to leave. So that evening he talked his parents into going to his grandparent's house far from Hiroshima. That's how he survived the blast. Later, he came to the U.S. and settled here."

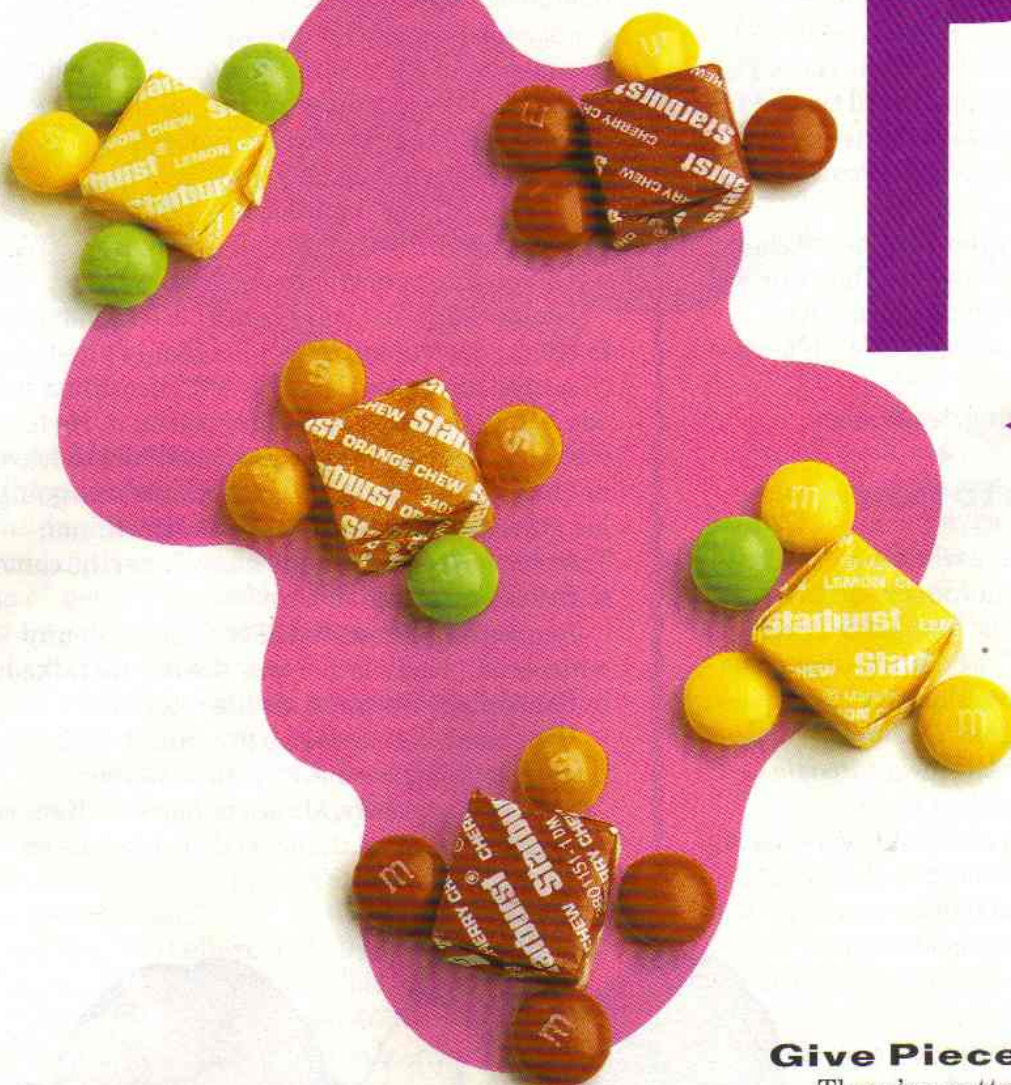
Jenny and Sean stared at each other. Jenny whispered, "Ken's father was the boy we talked to in Hiroshima. We saved his life after all!"

After class, Ken came up to Sean. "I don't have the money you gave me, so I still owe you."

Said Jenny quietly, almost to herself, "Ken, you owe Sean a lot more than you'll ever know." ♦







### ◀ Chews to Choose

Study these five groups of candy carefully. Can you guess which one does not belong?

### Give Pieces a Chance ▼

There's a pattern in this line of sweets. Can you guess which one of the candies in the circle should go next?





Z

Z

L

E

S



PHOTOS BY SPAN FELLEMAN

### From a Kiss to a Kiss ▲

Find a path from one kiss to the other. You may not move diagonally, and you may not cross over candies that are exactly the same type and color.



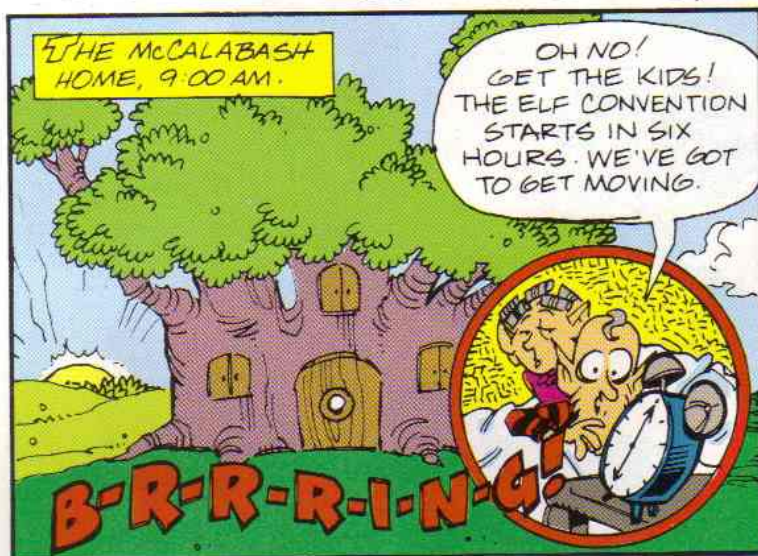
Answers on the Did It page.



# GNOME ALONE

A SQUARE ONE PUZZLE

STORY BY RUSSELL GINNS / ART BY KEITH S. WILSON

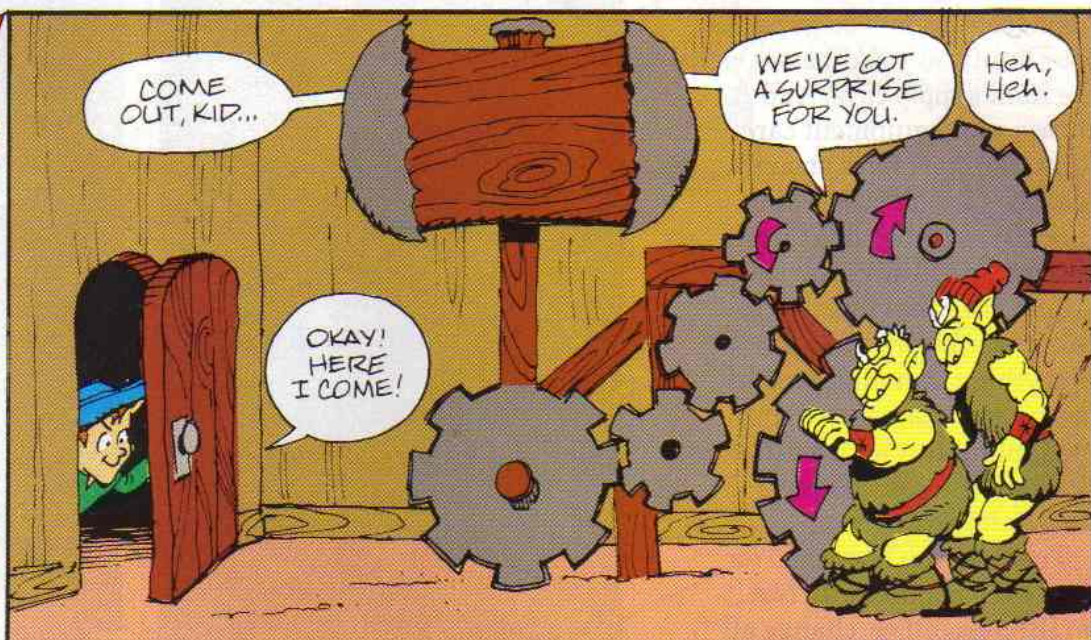






**BAM!**  
**HAMMER**  
**SAW!**  
**WHUD!**  
**NAIL!**  
**GLUE!**  
**CRASH**

TINKLE...



IS KELVIN DOOMED? LOOK AT THE GEARS CAREFULLY.  
WHAT'S GOING TO HAPPEN WHEN THE TROLL TURNS THE GEAR?  
ANSWER ON THE DID IT PAGE.



# BASIC TRAINING

## Programs For Your Computer

### MAMMOTH HUNTER

For Apple II, IBM and  
Commodore 64/128 Computers

**M**ammoths may look like cute, wooly elephants, but 25,000 years ago, prehistoric people hunted them. Now it's your turn to try mammoth hunting — with this computer game.

Once you type in the program and run it, all you have to do is follow the instructions on the screen. You'll need some tools before you go on your hunt, so you'd better visit the hunt supply cave. And choose your equipment carefully. You don't have enough seashells to buy everything. (Luckily, if things don't work out, you can always start over.)

Just as in real life, it isn't possible to be prepared for everything that might happen on your computer mammoth hunt. But with a little practice, you can become a master hunter.

The program is written for Apple II computers. To run it on IBM machines, change all HOME statements to CLS. For Commodore 64/128, change HOME to PRINT CHR\$(147).

Happy hunting!

```

10 DIM NS(6,2),HS(6),PS(6)
20 FOR X=1 TO 6
30 READ A$:HS(X)=A$
40 READ B$:PS(X)=B$
50 NEXT X
60 S=12:I=0
70 FOR X=1 TO 6
80 FOR Y=1 TO 2
90 NS(X,Y)="0":NEXT Y:NEXT X
100 HOME:GOSUB 480
110 PRINT "PICK ONE:"
120 PRINT "1) GO TO SUPPLY CAVE"
130 PRINT "2) GO ON MAMMOTH HUNT"
140 PRINT "3) START OVER"
150 INPUT R$:R=VAL(R$)
160 ON R GOTO 550,180,60
170 GOTO 100
180 HOME
190 C=INT(RND(1)*2)+1
200 IF C=2 THEN 250
210 PRINT "YOU HAVE SEARCHED ALL DAY."
220 IF NS(6,2)="1" THEN 240
230 PRINT "YOU HAVE NO FOOD. RETURN HOME":GOTO 740
240 PRINT "YOU EAT YOUR EXTRA FOOD."
250 PRINT:PRINT "YOU FIND A MAMMOTH HERD."
260 IF NS(5,2)="1" THEN 300
270 C=INT(RND(1)*2)+1
280 IF C=1 THEN 310
290 PRINT "YOU CAN'T GET CLOSE. RETURN HOME":GOTO 740
300 PRINT "YOU HIDE UNDER YOUR MAMMOTH SKIN."
310 IF NS(1,2)="1" THEN 330
320 PRINT "YOU HAVE NO SPEAR. RETURN HOME":GOTO 740
330 PRINT "YOU KILL A MAMMOTH!"
340 IF NS(4,2)="1" THEN 360
350 PRINT "YOU HAVE NO KNIFE. RETURN HOME":GOTO 740
360 PRINT "YOU CUT IT UP AND HEAD HOME"
370 C=INT(RND(1)*3)+1
380 IF C<1 THEN 430
390 PRINT "BUT IT STARTS TO SNOW"
400 IF NS(3,2)="1" THEN 420
410 PRINT "YOU DROP YOUR CATCH AND RUN HOME":GOTO 740
420 PRINT "YOU MAKE A FIRE AND STAY WARM."
430 PRINT "YOU ARE A MASTER HUNTER!!"
440 PRINT "PLAY AGAIN? Y/N"
450 INPUT R$
460 IF R$="Y" THEN 60
470 END
480 PRINT:PRINT "YOU HAVE:"
490 FOR X=1 TO 6
500 IF NS(X,2)="0" THEN 520
510 PRINT NS(X,1)
520 NEXT X
530 IF I<1 THEN PRINT "NOTHING"
540 PRINT:RETURN
550 HOME
560 PRINT "WELCOME TO THE HUNT SUPPLY CAVE."
570 PRINT "YOU HAVE ";S;" SEASHELLS TO TRADE"
580 PRINT:GOSUB 480
590 FOR X=1 TO 6
600 PRINT X;" ";HS(X);" ";PS(X);" SHELLS"
610 NEXT X
620 PRINT "7) LEAVE SUPPLY CAVE"
630 PRINT:PRINT "CHOOSE ITEM"
640 INPUT R$
650 R=VAL(R$):IF R>7 THEN 550
660 IF R<1 THEN 550
670 IF R=7 THEN 750
680 IF VAL(PS(R))=<S THEN 710
690 PRINT "NOT ENOUGH SHELLS"
700 FOR DE=1 TO 2500:NEXT DE:GOTO 550
710 I=I+1:NS(R,1)=HS(R):S=S-VAL(PS(R))
720 NS(R,2)="1"
730 GOTO 550
740 FOR DE=1 TO 3800:NEXT DE
750 GOTO 100
760 DATA SPEAR,4,DIGGING STICK,2
770 DATA FIRE-MAKING STONES,3,KNIFE,3
780 DATA MAMMOTH HIDE,3,EXTRA FOOD,2

```

Send your programs to:  
Basic Training  
3-2-1 CONTACT Magazine  
1 Lincoln Plaza  
New York, NY 10023



# THE SLIPPED & Disk SHOW

**G**reetings, gamers! Yes, this is Slipped Disk, the world-famous computer expert, ready to answer your computer-type questions.

I know most of you play games with your computers, but did you know that here at the Slipped Disk Show, that's what we like to do, too? Why, my assistant, Floppy (who also happens to be my dog), and I just love to play computer games like "computer fetch." That's when Floppy throws my computer into the backyard, and I run to fetch it. It's a lot of fun, but carrying your computer around in your teeth might hurt, so don't try it at home.

And speaking of teeth, here's a question we can sink our teeth into. It's from **Matthew Monaco** of San Martin, California. Matthew wants to know:

**"What happens when you turn off your computer while running a program?"**

In most cases, turning off the computer while you're in the middle of using a program will not hurt the program. However, it's

still not a good idea to shut down that way.

First, you'll definitely lose whatever data you're working on, whether it's your latest high scores or a letter to a certain incredibly good-looking world-famous computer expert. Second, many programs, like word processors, follow certain steps when you shut them down or "quit." If you don't give them a chance to "clean up" before you turn them off, it's possible you'll have

of Grand Haven, Michigan.

Beth asks:

**"What's a computer address?"**

Beth, the most famous computer address begins, "Four bytes and seven nanoseconds ago, our foreflopyps brought forth a new microchip." That's from Abraham Lincoln's Gettysburg Address, I think. But the kind of address you're talking about is different.

All personal computers have electronic memory called Random Access Memory, or RAM. RAM is divided up into bytes—each byte can hold one letter or number. A

computer with 512K Ram has room for more than 512,000 bytes in its memory. How does the computer keep track of where it's putting all the numbers and letters? Each byte of memory is given a number, or an address. The computer uses those addresses to find data it has stored in RAM, the way the post office uses addresses to deliver mail.

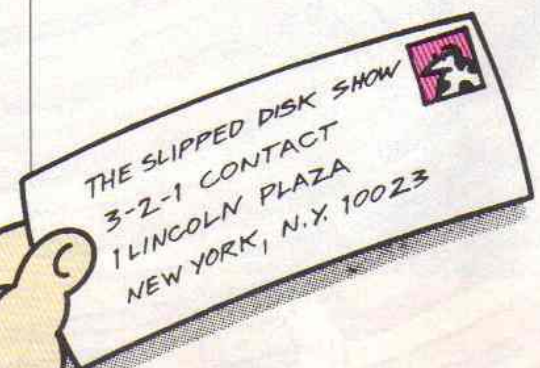
And speaking of addresses, don't forget ours. We're all set to answer more computer questions next month.

Send your questions to Floppy and me at:



trouble using them later on. So here's a good rule to follow: If your program has a menu choice named Quit, Shut Down or Exit, then use it every time you want to stop.

By the way, Floppy just said he doesn't know any incredibly good-looking world-famous computer experts. Just for that, I'm not going to play fetch with him again. But I will answer another question. This one is from **Beth Curry**







By Russell Ginns

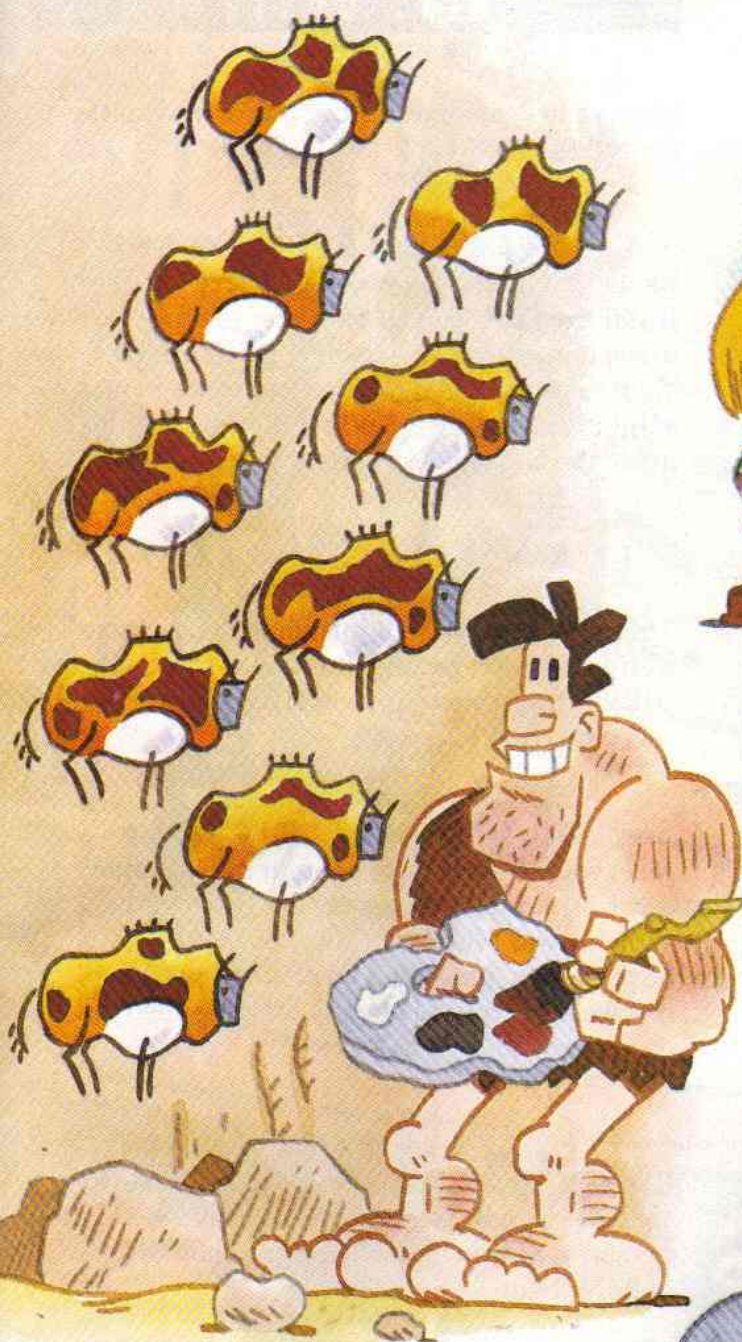
## GOING 'ROUND IN CIRCLES

Professor Zenbock was busy investigating a mysterious cornfield circle, when he got lost in the center. Can you help him find his way out so he can get back to work?

Investigate the answer on the Did It page.



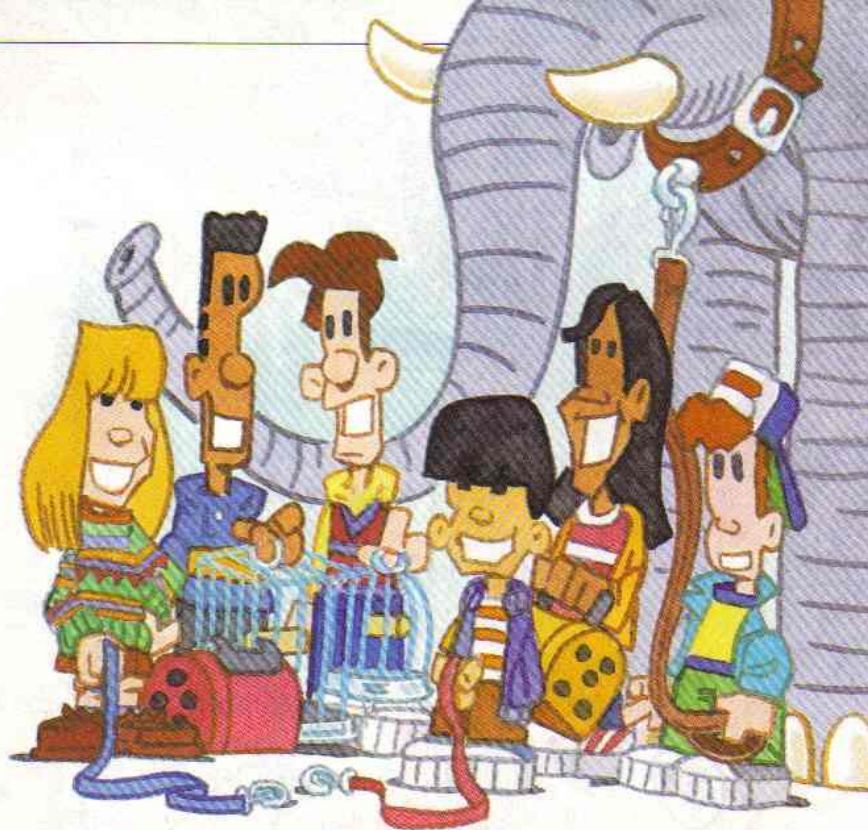




## PREHISTORIC PAINTING PAIRS

Alexi the Neanderthal is years ahead of his time. While his buddies are still trying to make stone tools, he's busy learning how to paint. Can you guess which two drawings are portraits of Theo, Alexi's pet bison?

Hint: They are the two drawings that are identical.  
Answer on the Did It page.



## SHOW AND SMELL

It's Pet Day in Mrs. Fullbrunch's class and all of the kids have brought their animals to school. Buzz took his pet elephant along. Can you figure out which animals the other students brought?

Choose from the animals at the bottom of the page. No pet's name contains any letters that are in found in its owner's name. No two students have the same pet. Answer on the Did It Page.

Buzz ELEPHANT      Gordon \_\_\_\_\_

Darryl \_\_\_\_\_      Rocky \_\_\_\_\_

Lisa \_\_\_\_\_      Zeke \_\_\_\_\_



FINCH  
DOG

CAT  
GORILLA

WEASEL  
ELEPHANT



# Did it

## MORE MYSTERIOUS CIRCLES

1) A thimble, 2) A Lifesavers candy, 3) A spray can, 4) A pencil sharpener, 5) A binder, 6) A Lego block.

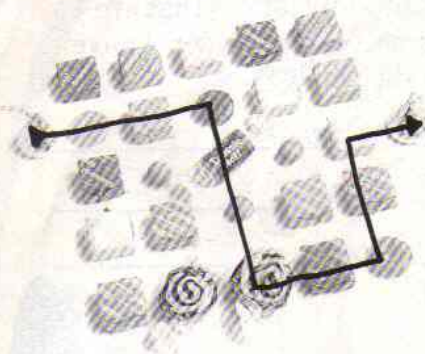
## CHEWS TO CHOOSE



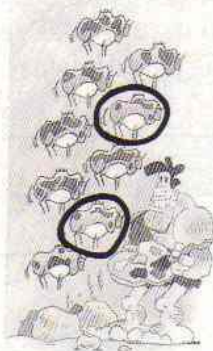
## GIVE PIECES A CHANCE



## FROM A KISS TO A KISS



## PREHISTORIC PAINTING PAIRS



## SHOW AND SMELL

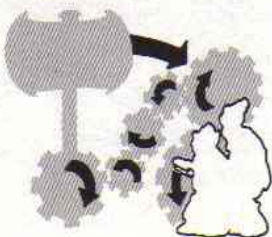
Buzz — Elephant, Darryl — Finch, Lisa — Dog, Gordon — Cat, Rocky — Weasel, Zeke — Gorilla.

## GOING 'ROUND IN CIRCLES



## GNOME ALONE

The last gear is going to turn clockwise. Kelvin wins again!



## NEXT MONTH

Here's a look at what's coming your way in the June 1991 issue of 3-2-1 CONTACT:

## BABOONS ON THE MOVE

Baboons live in Ethiopia — a country in Africa. But if you can't visit them there, you may be able to see them anyway — at New York's Bronx Zoo. We'll take you behind the scenes to see how the exhibit was put together and how the designers made the baboons feel right at home!

## IT'S A BIRD... A PLANE... IT'S AN HPV!

This photo feature will introduce you to some weird, wild and wacky human-powered vehicles (HPVs). Get a close-up look at some of these speed machines.

## MAKING VIDEO GAMES

Meet some designers of popular video games and find out how the games are put together. Who knows? Maybe one day your ideas will be put into a game. Or better yet, maybe one day we'll be writing about a famous video game designer: You!

## PSSST! PASS IT ON!

CONTACT explores the world of rumors: How they begin, how they change as they move from person to person and why people shouldn't believe them.

## PLUS



## THE TIME TEAM



## FACTOIDS



## ANY QUESTIONS?



## SQUARE ONE PUZZLES



## AND MUCH, MUCH MORE!



# CAPRISUN® 100% NATURAL



**SEE SPECIALLY MARKED CAPRI SUN®  
BOXES FOR THIS FUN OFFER.**

CAPRI SUN® 100% NATURAL® IS A REGISTERED TRADEMARK OF CAPRI SUN, INC. © 1991  
YOGI BEAR, SCOOBY-DOO, HUCKLEBERRY HOUND AND TOP CAT CHARACTERS,  
© 1991 HANNA-BARBERA PRODUCTIONS, INC. LICENSED BY HAMILTON PROJECTS, INC.

**HANNA-BARBERA® FESTIVAL**

**HANNA-BARBERA®  
CLASSIC VIDEOS**

**ONLY \$4.95**


WITH PURCHASE OF CAPRI SUN®

**WIN ONE 25,000 PRIZES  
OF OVER**

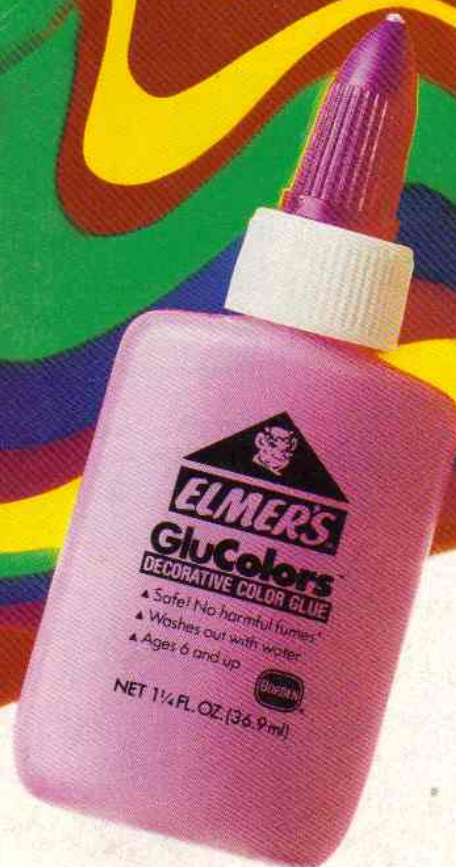
NO PURCHASE NECESSARY







PUMP  
OUT THE  
COLOR



## INTRODUCING ELMER'S® GLUCOLORS.™

Peel it. Stick it. Write it.  
Spread it. Mix it. Twist it. Bend it.  
Even glue with it. But don't hide it.  
Let your imagination show,  
with six new Elmer's GluColors.

*The glue  
that was meant  
to be seen!*



IF IT'S BORDEN-IT'S  
GOT TO BE GOOD

